DOCUMENT RESUME

ED 042 176 AL 002 543

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TITLE Principal Component Analysis of Ratings of Some Deviant English Sentences.

INSTITUTION Educational Testing Service, Berkeley, Calif.; Educational Testing Service, Princeton, N.J.
SPONS AGENCY National Science Foundation, Washington, D.C.; Office of Naval Research, Washington, D.C.
REPORT NO RB-70-12
PUB DATE Feb 70
NOTE 90p.

EDRS PRICE EDRS Price MF-$0.50 HC Not Available from EDRS.
DESCRIPTORS Child Language, *Comprehension, English, *Grammar, *Psycholinguistics, Second Language Learning, Semantics, *Sentences, *Statistical Analysis, Syntax, Transformation Theory (Language)
IDENTIFIERS *Principal Components Analysis

ABSTRACT

The comprehension of deviant sentences is dependent on several linguistic variables. Grammaticalness (G), meaningfulness (M), and familiarity (F) are three variables which are potentially such. In order to study the effect of violating these variables upon Ss' responses to deviant sentences, 85 deviant and 15 correct sentences were assigned to eight groups representing all combinations of two values ("correct" or "deviant") on these three variables. The 100 sentences were given to four equal groups of Ss (total N=112), who rated each sentence from 0 to 10 on the basis of either grammaticalness (G*), meaningfulness (M*), familiarity(F*), or ordinariness(O*). The data of the first three groups were then combined into an 84 by 100 matrix. A principal components analysis was performed on the cross-product matrix with a varimax rotation. Four interpretable factors emerged, accounting for 89% of the variability. Factor I was a general comprehensibility factor in the factor loadings, related to changes in all three variables. However, the familiarity Ss scored highest on Factor I. Factors II and III represented G-G* and M-M*, respectively, in both factor loadings and factor scores. Factor IV corresponded to the F variable in the factor loadings, but was uninterpretable for the factor scores. [Not available in hard copy due to marginal legibility of original document.] (Author/FWB)

RB-70-12

PRINCIPAL COMPONENT ANALYSIS OF RATINGS OF SOME DEVIANT ENGLISH SENTENCES

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Prepared in connection with research done under
Office of Naval Research Contract N 00014-67-A-0151-0006
Project No. NR 006-04-01 and
National Science Foundation Grant GB-3402
Continuation of G-22889
with Princeton University, Princeton, New Jersey
Project on "Mathematical Techniques in Psychology"
Principal Investigator: HAROLD GULLIKSEN

Educational Testing Service
Princeton, New Jersey
February 1970

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Abstract

The comprehension of deviant sentences, a not infrequent demand in natural situations, is dependent on several linguistic variables. Grammaticalness (G), meaningfulness (M), and familiarity (F) are three variables which are potentially such. In order to study the effect of violating these variables upon Ss' responses to deviant sentences, 85 deviant and 15 correct sentences were assigned to eight groups representing all combinations of two values ("correct" or "deviant") on these three variables. The 100 sentences were given to four equal groups of Ss (total N = 112), who rated each sentence from 0 to 10 on the basis of either grammaticalness (G*), meaningfulness (M*), familiarity (F*), or ordinariness (O*). The data of the first three groups were then combined into an 84 by 100 matrix. A principal components analysis was performed on the cross-product matrix with a varimax rotation. Four interpretable factors emerged, accounting for 89% of the variability. Factor I was a general comprehensibility factor in the factor loadings, related to changes in all three variables. However, the familiarity Ss scored highest on Factor I. Factors II and III represented G-G* and M-M*, respectively, in both factor loadings and factor scores. Factor IV corresponded to the F variable in the factor loadings, but was uninterpretable for the factor scores.

PRINCIPAL COMPONENT ANALYSIS OF RATINGS OF SOME DEVIANT ENGLISH SENTENCES

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Although one encounters deviant utterances in several different "natural language contexts," few studies have been devoted to the study of such utterances. Children, just learning to speak, often produce utterances which are deviant according to any reasonable description of adult language. It is, of course, true that these utterances follow their own regularities (Braine, 1963; Brown & Fraser, 1963; Menyuk, 1964). However, if these children's utterances are to be comprehended by adults--and, in fact, the large majority are comprehensible, at least in part--then the utterances must be processed by the adult grammar as deviant. Thus, some subsection of the adult grammar must be programmed for the comprehension of such utterances.[2] A second source

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[1]Now at Kent State University and Dartmouth College, respectively.

[2]In this paper, we sometimes use "grammar" in a very general sense, following Chomsky (1965). In these cases, "grammar" refers to a complete description of the language including phonological, syntactical, and semantic components. What in common usage is referred to as "grammar" is more or less equivalent to "syntax" (cf. instructions to Ss for an example of this contrast). If there is a possibility of confusion of the two senses of "grammar," the correct sense will be appropriately noted. Thus, "deviant" utterances refer to any utterance which violates any of the rules of the three components of the grammar. Ultimately, even this formal definition of "deviant" reduces to the judgments of native speakers (see Danks, 1968, for a more extended discussion of this point). In this study we will be concerned primarily with syntactic and semantic deviances.

"Comprehension" is also being used in a generic sense. It is the result of a complete and successful processing of the utterance through the grammar; thus, it includes phonological perception, syntactic interpretation, and semantic understanding. "Perception," "interpretation," and "understanding" do not strictly refer to their common meanings, but are defined as technical terms referring to the assigning of a description from the respective components of the grammar.

criteria for an ideal grammar be revised so that the grammar generates not only all the fully grammatical sentences but also all the deviant ones and labels them as such.

In order to comprehend a deviant utterance, the most parsimonious manner in which to process the utterance is to use the "regular" grammar insofar as possible, making adjustments only when necessary to account for the deviations from regularity. Thus, how one processes deviant utterances will provide evidence for possible mechanisms which are operating in the processing of normal utterances. The mechanism by which the adjustments are made must have a regular link to the "normal" grammar (Lakoff, 1965). If, as some current psychological theories of language performance suggest (Miller, 1962; Miller & Chomsky, 1963), the language user has internalized an analogous form of the formal grammar and uses it in the production and comprehension of utterances, then there is an additional reason to study the language user's response to deviant and nondeviant utterances in the same situation.

The few empirical studies to date which have studied any form of deviant utterances represent a wide range in experimental sophistication and the types of deviances studied (see Danks, 1968, for a more complete review of the linguistic and psychological literature relating to deviant sentences). In a polemical discussion, Hill (1961) sought to rebut Chomsky's criterion that groups of English words can be consistently and agreeably identified as grammatical or ungrammatical and conducted an informal study using only 10 sentences and 10 Ss. Some of the sentences were formally grammatical, some were grammatical but meaningless, and some were ungrammatical. Of the 10 Ss, 8 were either college professors (English or linguistics) or graduate students, 1 was an undergraduate business major, and 1 was a secretary. The

Ss were first asked to read aloud all 10 sentences. They were then asked to indicate which strings were ungrammatical and which were grammatical. Although the conclusions were rather tentative owing to the small select sample of both Ss and test items, the results indicated that there was no general conception of grammaticalness. Hill also concluded that many non-syntactic variables, e.g., intonation, meaning, punctuation, etc., entered into the judgments.

Maclay and Sleator (1960) presented six sets of sentences varying differentially in three dimensions which they called grammaticalness, meaningfulness, and ordinariness. The Ss were 57 undergraduates divided into three groups. Group I responded to the question "Do these words form a grammatical English sentence?" with respect to each string. Group II was asked the same question except that "meaningful" was substituted for "grammatical." And for Group III, the substitution was "ordinary" with the same procedure. A final ranking of groups based on the proportion of Ss giving a "yes" response matched the predicted rankings based on linguistic considerations of the way the strings were constructed. In contrast to Hill (1961), the judgments of grammaticalness were relatively independent of meaningfulness and ordinariness. While no data were presented relevant to between-S agreement, there was some indication that the Ss' judgments were not in complete agreement. Although the Maclay and Sleator experiment was better controlled than that of Hill, there were still methodological problems to be solved, e.g., the more precise specification of the dimensions on which the sentences were constructed.

Coleman (1965) constructed 10 series of 4 sentences, each series having 4 levels of grammaticalness. The sentences were constructed by a method

similar to the theoretical analysis proposed by Miller and Chomsky (1963). For the lowest level of grammaticalness words were drawn at random. At each succeeding level, word class restrictions were placed on the possible choice of words, although within the restrictions the words were randomly selected. At the fourth and highest level of grammaticalness used in this study, the restrictions were sufficiently severe that, although the words were drawn randomly, the strings were very close to being completely grammatical. Ten college freshmen ranked the 4 sentences within all 10 series separately in order of grammaticalness. All series were ranked in the predicted direction. Thus, in contrast to Hill's Ss, these Ss were able to differentiate degrees of grammaticalness.

In an extension of Coleman's work, Danks (1967) used a subset of Coleman's sentences and a different scaling technique. Within-S consistency and between-S agreement were high. There was strong evidence that college undergraduates can differentiate degrees of grammaticalness as suggested by Miller and Chomsky. However, there was no clear differentiation between the two lower levels of grammaticalness (the separation is also not clear in Coleman's results). Since the word class restrictions of the second lowest level were those such as Noun Phrase, from which any word including a verb may be ultimately derived, Noun Phrase represents no more a restriction than drawing the words at random. The two lower levels are therefore comparable. Thus to clarify this situation, the formatives included as word class restrictions must be able immediately to dominate a terminal symbol of the base structure in a permissible derivation. Such a qualification excludes Noun Phrase, but not Noun. Though the qualification was implicitly followed in their examples, it was not stated explicitly by Miller and Chomsky. The results of both Coleman and Danks support this qualification.

Marks (1965, 1967a, 1967b) has made an extensive study of Ss' responses to varying syntactical distortions. Although his distortions were not in general related to a specific linguistic theory, he was able to make predictions (which were confirmed) based on a psychological model of sentence processing. This model incorporated both linguistic, e.g., phrase structure rules, and psychological notions, e.g., serial order processing. Marks and Miller (1964) studied the interrelation of syntactic and semantic distortions on learning of the deviant sentences. Using sentences of the form

(1) $\quad Adj_1 + N_1 + V + Adj_2 + N_2$,

they effected syntactic distortions by scrambling the word order in several ways (anagram sentences). They assumed that a large measure of the original meaning remained in the scrambled form, since either the Ss could reconstruct the utterance or induce the general notion from the associative overlap. Distortion of meaning (anomalous sentences) without affecting the syntax was accomplished by "diagonalizing" over a set of five sentences each of the same form. That is, the first word of the first sentence (W_{11}), the second word of the second sentence (W_{22}), etc., were combined until five new sentences were formed thusly:

(2) (a) $W_{11} + W_{22} + W_{33} + W_{44} + W_{55}$

(b) $W_{12} + W_{23} + W_{34} + W_{45} + W_{51}$

(c) ...

(d) ...

(e) $W_{15} + W_{21} + W_{32} + W_{43} + W_{54}$,

where W_{ij} = the i -th word in the j -th sentence. Each sentence was of the same syntactical form as (1), but since the topics were mixed the semantic structure was effectively destroyed. In addition to the normal anagram and anomalous sentences, a fourth set of sentences (word lists) which distorted both syntax and semantics was constructed by scrambling the word order of (2). The groups of sentences were presented aurally to Ss in a free learning situation. The anagram and anomalous sentences produced equal deficits in the mean percentage of words correct compared with normal sentences, and, of course, the word lists were lowest. However, there were differences between the anagram and anomalous sentences in terms of the kinds of errors committed. Thus, syntax and semantics can have relatively different effects on Ss' performance when measured via deviant sentences.

The principal dimension on which deviant utterances have been produced has been that of syntax, although semantics and ordinariness also have been used. If one is to study how Ss go about comprehending deviant utterances, then one of the primary tasks is to identify the relevant variables of the sentences. Thus, as many variables as possible were included which might potentially have an effect. In this study the sentences to be used were chosen to represent all possible combinations of "correct" or "deviant" grammatical (G: g or $\bar{g}$),[3] meaningful (M: m or $\bar{m}$), and familiar (F: f or $\bar{f}$) sentences. This classification results in eight possible groups of sentences. The notion of familiarity was adapted from that of ordinariness

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[3] g denotes a grammatical sentence; $\bar{g}$ is used to indicate a sentence which is not grammatical. Similar remarks hold for m , $\bar{m}$, f , $\bar{f}$, o , and $\bar{o}$. Quite obviously none of these variables represent a strictly dichotomous construct either empirically or formally; however they were constructed as such to facilitate interpretation in this exploratory study.

(O: o or $\bar{o}$) used by Maclay and Sleator (1960). They define "an ORDINARY sentence as one which we [the authors] believe to occur with relatively high frequency in English [p. 276]." They do not attempt to construct sentences corresponding to three of the eight possible types--$gm\bar{o}$, $\bar{g}mo$, and $\bar{g}\bar{m}o$. In the latter two cases, it is clear that a meaningless, yet ordinary, i.e., a common occurrence, utterance would be extremely hard to construct. Typically, one does not produce utterances which are meaningless under sufficiently common conditions that they be called ordinary. However, it is conceivable that there are nonmeaningful clichés such that while the utterance is familiar, the "purpose" of uttering the sentence is the uncommonness or uniqueness of the utterance. For this reason, we shifted from the ordinariness variable to that of familiarity. In this way we thought it possible to find sentences which might be included in the two groups $\bar{g}\bar{m}f$ and $\bar{g}\bar{m}f$. We also thought that the third group not studied by Maclay and Sleator ($gm\bar{o}$ or $gm\bar{f}$) could be approximated by using syntactically correct sentences from very esoteric subjects such as recondite philosophy or technical science.

The problem of ordinariness, familiarity, and other variables related to frequency of occurrence is fraught with arguments about the importance of these variables as constructs. In principle we agree that it is extremely improbable that our Ss have heard or seen any of the f sentences before and that the objective difference in frequency between f and $\bar{f}$ sentences is so small as to approach zero (if it could be measured; in practice it cannot). However, we have included the F variable since, though Ss may be wrong, they do have a "feeling" of familiarity and are able to respond on the basis of it (see, e.g., Maclay and Sleator, 1960).

A question implicit in the above discussion to which we will direct some attention is the independence of the variables from each other. Linguistic theory of both the older structuralist tradition and of the newer generative-transformationalist school have emphasized the independence of syntax and semantics. Such a distinction was felt necessary for an adequate formal description of language. While the proclaimed independence may be necessary for a formal description, its efficacy for a model of the language user would have to be independently demonstrated. Further, the independence of F from both G and M has yet to be satisfactorily demonstrated, Maclay and Sleator not to the contrary. Although the present study is not designed to be the crucial experiment on the question, some evidence will be available.

Thus, the primary purpose of this study was to identify some of the variables used by Ss in responding (e.g., by ratings on various criteria) to deviant sentences. A secondary purpose was the tentative analysis of the interrelations of these variables.

The procedure devised to measure the effects of variables and their interrelations was a principal components analysis of the ratings of the individual sentences. Basically, a principal components analysis allows us to describe the ratings obtained as a joint function of the instructions given and the sentences used. Ideally, we should be able to find three values for each sentence which describe its location on hypothetical G , M , and F scales. These are known as the factor loadings of the sentences. In addition, we should be able to find three coefficients for each S which describe the extent to which his judgments are based on G* , M* , and F* . These are known as factor scores. In the basic factor analysis model, the

rating given a sentence by a particular S is assumed to be a weighted sum of its factor loadings, the weights being the respective factor scores of Ss.

If the language of factor scores does not seem particularly enlightening in this context, it is because principal components analysis was first developed to describe mental abilities and personality traits. Its use as a scaling technique is more recent and dates from Tucker's (1960) work on the vector scaling model.

To actually obtain these factor loadings and factor scores, we extract the first several principal components of the raw data matrix. These are defined as the best predictors of the raw data in the sense that linear combinations of them account for the maximum variability in the ratings. At this point we should mention the essential difference between principal components analysis and the related collection of techniques known as factor analysis. The former concentrates on explaining overall variability in the data, while the latter tries, primarily, to explain covariability, or interrelations. This is not to say that factor analysis does not explain variability or that principal components analysis does not explain covariability, but rather that the emphasis is different in the two approaches. In the present study, it was felt that the emphasis should be on reproducing the ratings themselves and not the covariances between ratings.

Method

Subjects. The Ss were 112 students enrolled in a summer school at Rutgers--The State University, New Brunswick, New Jersey. They were paid for their services. All were native speakers of English.

Sentence materials. One hundred sentences satisfying the criteria for one of the eight possible combinations of the three two-valued variables discussed above--grammaticalness, meaningfulness, and familiarity--were constructed or assembled from other studies. The sentences are listed by types in Table 1. The sentences used by Maclay and Sleator (1960) were assigned to the appropriate groups; these were the first five sentences in groups gmf (1-5), $\bar{g}$mf (16-20), g$\bar{m}$f (33-37), $\bar{g}\bar{m}$f (48-52), and $\overline{gmf}$ (63-67). A direct translation of ordinariness to familiarity has been assumed. The normal sentences, anomalous and anagram string, and the word lists used by Marks and Miller (1964) were assigned to the gmf (6-15), g$\bar{m}$f (38-47), $\bar{g}\bar{m}$f (53-62) and $\overline{gmf}$ (68-77) groups, respectively. The distortions of syntax and semantics introduced by Marks and Miller (1964) were highly atypical, so that, with the exception of normal sentences, their sentences were all assumed to be unfamiliar. For the remaining 12 sentences for group $\bar{g}$mf (21-32) appropriate selections were made from examples of children's speech reported by Menyuk (1964). We assumed that these examples would provide interesting information about natural language relative to one of the specific types of deviations which had prompted this study.

The group of sentences characterized as gm$\bar{f}$ (78-87) were derived from one of two general sources. The first five were quotes (sometimes with slight modifications to shorten the length) from either Kant, Husserl, or Merleau-Ponty. The last five were selected (again with some modifications of length) from a recent issue of Science. These 10 sentences were supposed to be unfamiliar, in general, to this particular population of Ss; yet all were certainly grammatical and meaningful. The last 13 sentences--7 in g$\bar{m}$f (88-84) and 6 in $\overline{gmf}$ (95-100)--were selected from various literary or

Table 1

List of the 100 Sentences Used, Grouped According to Their Supposed Construction

Sentence No.	Sentence
GRAMMATICAL-MEANINGFUL-FAMILIAR (gmf)	
1	I wish I could write to each of you individually.
2	The chairman's most important job is timing.
3	Numerous other countries will be represented.
4	They finished it yesterday.
5	He was ready to go.
6	Rapid flashes augur violent storms.
7	Pink bouquets emit fragrant odors.
8	Fatal accidents deter careful drivers.
9	Melting snows cause sudden floods.
10	Noisy parties wake sleeping neighbors.
11	Furry wildcats fight furious battles.
12	Respectable jewelers give accurate appraisals.
13	Lighted cigarettes create smoky fumes.
14	Gallant gentlemen save distressed damsels.
15	Soapy detergents dissolve greasy stains.
UNGRAMMATICAL-MEANINGFUL-FAMILIAR ($\overline{\text{g}}$mf)	
16	Not if I have anything to do with it.
17	Probably, although he may surprise us.
18	About the time that the new models were shown.
19	The kind of person who learns to talk with the natives.
20	In order to get there before they close.
21	He'll might get in jail.
22	He'll have to go the doctors.
23	I want a mild please.
24	Put the hat.
25	I know which do they like.

Table 1 (Contd)

Sentence No.	Sentence
UNGRAMMATICAL-MEANINGFUL-FAMILIAR ($\bar{g}mf$) (Contd)	
26	Who he is kissing?
27	It was snow yesterday.
28	Take off it.
29	She has lots of necklace.
30	Give me some soaps.
31	He growed up fast.
32	Him is a bad boy.
GRAMMATICAL-NONMEANINGFUL-UNFAMILIAR ($g\bar{mf}$)	
33	Appointments can now winters generously.
34	Extra rivers wished casually to cancel off.
35	Tired windmills hinge a lot of elephants.
36	Seventeen intuitions ate highly across the right.
37	During dishing, tolerant marbles remarked off.
38	Rapid bouquets deter sudden neighbors.
39	Pink accidents cause sleeping storms.
40	Fatal snows wake violent odors.
41	Melting parties augur fragrant drivers.
42	Noisy flashes emit careful floods.
43	Furry jewelers create distressed stains.
44	Respectable cigarettes save greasy battles.
45	Lighted gentlemen dissolve furious appraisals.
46	Gallant detergents fight accurate fumes.
47	Soapy wildcats give smoky damsels.
UNGRAMMATICAL-MEANINGFUL-UNFAMILIAR ($\bar{gmf}$)	
48	Yesterday, I the child a dog gave.
49	The with feet aching man came yesterday home.
50	Get me from the kitchen a big spoon.

Table 1 (Contd)

Sentence No.	Sentence
UNGRAMMATICAL-MEANINGFUL-UNFAMILIAR ($\overline{gm}\overline{f}$) (Contd)	
51	You can him not understand.
52	To me was interesting the movie.
53	Rapid augur violent flashes storms.
54	Bouquets pink odors fragrant emit.
55	Deter drivers accidents fatal careful.
56	Sudden melting cause floods snows.
57	Neighbors sleeping noisy wake parties.
58	Furry fight furious wildcats battles.
59	Jewelers respectable appraisals accurate give.
60	Create fumes cigarettes lighted smoky.
61	Distressed gallant save damsels gentlemen.
62	Stains greasy soapy dissolve detergents.
UNGRAMMATICAL-NONMEANINGFUL-UNFAMILIAR ($\overline{gmf}$)	
63	A keeps changed very when.
64	Tables down cod ashes rock under off two syrup.
65	Ought cool send had grand the respiratory.
66	Not off bandage to now lake asked so is were.
67	Label break to calmed about and.
68	Rapid deter sudden bouquets neighbors.
69	Accidents pink storms sleeping cause.
70	Wake odors snows fatal violent.
71	Fragrant melting augur drivers parties.
72	Floods careful noisy emit flashes.
73	Furry create distressed jewelers stains.
74	Cigarettes respectable battles greasy save.
75	Dissolve appraisals gentlemen sighted furious.
76	Accurate gallant fight fumes detergents.
77	Damsels smoky soapy give wildcats.

Table 1 (Contd)

Sentence No.	Sentence
GRAMMATICAL-MEANINGFUL-UNFAMILIAR ($gm\bar{f}$)	
78	A house is a representation, the transcendental object is unknown.
79	Natural being is a realm whose existential status is secondary.
80	The correlate of this consciousness is immanent temporality.
81	Sensation can be anonymous only because it is incomplete.
82	Intellectualism remains anterior to the problem of oriented space.
83	The surface area of silicic acid has been determined by absorption.
84	Vernier acuities are inseparable for test targets.
85	The protein network is composed of an amorphous matrix.
86	The archosaurian ancestors are probably in the ophiocodont group.
87	The segmentally ganglionated nerve cord was mapped.
GRAMMATICAL-NONMEANINGFUL-FAMILIAR ($g\bar{m}f$)	
88	A rose is a rose is a rose.
89	The medium is the massage.
90	The mome raths outgrabe.
91	'Twas brillig, and the slithy toves did gyre and gimble.
92	May the hair on your feet grow long.
93	The key is in the sunlight at the window in the bars.
94	All mimsy were the borogoves.
UNGRAMMATICAL-NONMEANINGFUL-FAMILIAR ($\overline{gmf}$)	
95	Lucy in the sky with diamonds.
96	Rah, rah, siz, boom, bah.
97	Hutsut ralston on the rillera.
98	Within you and without you.
99	In the world, given, flower maddened, Jehovah accept.
100	Bah, humbug.

popular sources, which would, perhaps, be somewhat familiar to the Ss. Although these sentences can be said to "mean" something in their respective contexts, this meaning is rather obscure, and this even more obscure when taken out of context. Some of the sources were Shakespeare, Dickens, McLuhan, Tolkein, Allen, Ginsberg, Lewis Carroll, the Beatles, a football cheer, and a 1930's slang expression. Although it was not expected that all of these expressions would be appropriate to their respective groups, it is reasonable to assume that enough of them were correctly constructed and assigned to provide a valid measure of that group. It is also obvious that these groups are not homogeneous with respect to the precise type of deviations defined by the label of the group. However, we included the many different types of deviation because of uncertainty as to which types might be the most efficacious.

Procedure. The 100 sentences were placed in a random order and given to four equal groups of 28 Ss, each of which differed only in the instructions. All Ss were asked to rate the sentences from 0 to 10, with decimal scaling permitted on the basis of only one dimension. The four groups of Ss were each asked to rate the sentences on the basis of one of the following labels: grammaticalness (G*), meaningfulness (M*), familiarity (F*), and ordinariness (O*).[4] The Ss were given no additional help in defining these concepts other than the single word label. It was implied that they were to define the concept for themselves. Examples of the four sets of instructions and the random order of sentences are in Appendix A. The four groups of Ss were

[4]The instructions to the Ss were obviously related to the variables identified in the sentences. However, since there is no a priori reason to make the correspondence one of equivalence, the two different sets of abbreviations have been used for the groups of sentences and groups of Ss.

equalized as much as possible in each session. Seven sessions of varying size were needed to administer all of the tests.

Results

The 112 Ss by 100 sentences raw data matrix is presented in Appendix B for reference of anyone wishing to use the data for additional analyses.

Scale values. The median and semi-interquartile range for each sentence were computed for each group of Ss (Table 2). Because of the extreme skewness of many of the distributions, nonparametric measures are a more reasonable estimate of the central tendencies and variabilities.

The O* group was included simply to establish a connection between Maclay and Sleator's concept of O and that of F used here. The Spearman correlation between the median scale values across sentences for the two groups of Ss was $r_s = 0.93$ (corrected for ties). This correlation was highly significant (t_s (98) = 25.051, $p < .001$). Thus, the instructions did not have an overall effect on the ratings for F* and O* . However, the distinction was introduced specifically to facilitate (at least by the intuition of the experimenter) the construction of the $\overline{gmf}$ and $\overline{\overline{gmf}}$ sentences. Since these two groups constituted only 13% of the total sample of sentences, it is possible that differences in the ratings of these two groups were overshadowed by the similarity of the two concepts for the other groups of sentences. Therefore, a Spearman correlation was computed between the F and O Ss for these two groups of sentences. The correlation was also large and significant ($r_s = 0.91$, t (11) = 7.187, $p < .001$). Although a supposed distinction between F and O was made in the construction of sentences, the ratings from these two groups of Ss were

Table 2

Medians (Mdn) and Semi-Interquartile Ranges (SIR) for Each Sentence Across the Four Groups of Ss and Arranged According to Supposed Construction

Sentence Number	Groups of Ss							
	G*		M*		F*		O*	
	Mdn	SIR	Mdn	SIR	Mdn	SIR	Mdn	SIR
gmf								
1	10	1	10	0	10	2	10	1
2	10	1	10	1.5	10	2	10	0
3	10	1	10	1	10	1	10	0.5
4	10	0	10	1	10	0	10	0
5	10	0	10	0	10	0	10	0
6	10	7	7	8	5	6.5	5	6.5
7	10	0	10	1	10	2	10	1.5
8	9.25	2.5	7.25	5.5	8	6.5	8.5	3.5
9	10	0.5	10	0.5	10	1	10	0
10	10	0	10	0	10	1	10	0.4
11	9.5	2	8	5	7	6	9	2.5
12	10	0	10	0	10	1.5	10	0
13	10	1	9	2.5	7	3	8	4.5
14	10	0	10	1	9	4	10	2
15	10	0	10	0.5	10	2	10	0
$\bar{g}mf$								
16	7	2.5	9	4	10	0	10	1
17	7	5	8.85	3	8	2.5	9	3.5
18	3	3.5	7	4	8.5	3.5	8	5
19	5	3.5	8.5	3.5	8.5	2.5	8	4
20	4	5	9	3.25	10	1	8	4.4
21	3.5	4.5	7	5.5	5	4	5	6
22	8	3.5	9	2	8	4.5	9	4
23	4.5	5	4	5	5	4.5	4.5	4.5
24	3	5	5	5	4	4	3	4
25	5	3.5	6	5.25	5	4	5.5	5
26	6.75	4.5	9	2.5	7.5	4.75	9	3.5
27	6.5	5.5	8	3.5	6	6	6	4.5
28	4	7.5	6.5	7	5.5	6.75	4	6
29	6	4.5	6.8	5.25	5.5	5	7	3.5
30	6.75	5.5	7.5	3.5	6	6	8	5
31	4	6	7.45	3	6	5	7	3.5
32	4.5	6	8.5	3.5	6	3	6	4.5

Table 2 (Contd)

Sentence Number	Groups of Ss G* Mdn	G* SIR	M* Mdn	M* SIR	F* Mdn	F* SIR	O* Mdn	O* SIR
gmf								
33	0	2	0	1.5	0	3.5	1	3
34	3	6.5	0.5	2.5	0	2.5	2	4.5
35	6	6	1	3	1.5	4	1.5	3.5
36	3	5.5	0	3.5	1	3.5	2	3
37	1	3	0	1	0	4	1.5	3.5
38	5.5	7	2	4	2	5	3	3
39	7.5	6.5	1	6	2	5.5	3	4
40	7	6	2	5.5	1.5	4	3	3.5
41	3	6.5	0	1.75	0	2.5	1	3
42	6.5	5.5	2.5	5	1	3	2.5	5.25
43	6.5	8	2	4	0	4.5	3	5.5
44	7	7.5	0.5	5	0	4	2	4.5
45	4	6.5	1	4	0	3	2	4
46	7	7	1.5	3	2	4.5	4	5.5
47	4.5	7.5	0	1	0	3.5	2	4
gmf								
48	5	3.5	6.5	4.5	5	6	3	4
49	3	5.5	7	5	4	6	3.5	5
50	6.25	3	8	3	5.5	3	6.5	4.4
51	5	4	8	4	5	5	4.5	5
52	5	3.75	8	3	6	4	6	5
53	2	3	3	5.5	1	4	2	3.5
54	2	3.5	5.5	5.5	3	6	2	4.5
55	2	3	1	6	0.5	4.5	2	5
56	2	5	6	3.75	4	6.5	4.5	5.5
57	2	4	6	5.5	3	5	3	5
58	2	4	5	5	0	3	2	4
59	2	4	7	3	2.5	6.5	3	4
60	0	2	2.5	4.5	0	3	2	4
61	1	3	4.5	5.5	1.5	5.5	2	3
62	2	5	3.5	5.5	2.5	5.5	3	4.5
gmf								
63	0	1	0	0.5	0	1	0	1.5
64	0	1.5	0	0	0	1.5	0	2
65	0	1	0	1	0	2	1	3
66	0	0.5	0	1	0	2	0	1
67	0	2	0	0	0	1	0	2
68	0	1	0	1.5	0	3	0	2

Table 2 (Contd)

Sentence Number	Groups of Ss G* Mdn	G* SIR	M* Mdn	M* SIR	F* Mdn	F* SIR	O* Mdn	O* SIR
gmf (Contd)								
69	0	2	0	2.75	0	2	0	1
70	0	2	0	2	0	2	1	2
71	1	3	0	1.4	0	2.5	1	2.5
72	0	2.5	0	1.5	0.5	4	0.5	3
73	1	3	0	1	0	2	0.5	3
74	1	3.5	0	1	0	0.5	0.5	3
75	0.5	2	0	1.5	0	2	1	2.5
76	0	0.5	0	2.5	0	2.5	0.5	2.5
77	0	3	0	1	0	3	0.25	2.5
$\overline{gmf}$								
78	8.5	3.5	8	3	5.5	6.5	8.5	4
79	9	3	6	4	8.5	4.5	8	3.5
80	6.5	4.5	4	5.5	6.5	5.5	5.5	6
81	9.5	2	8	3.5	6	3.5	8.5	5
82	10	1.5	7	6.75	4.5	5	6.5	3.5
83	10	0	8.5	5	7	5	9	2
84	9	3.5	4.5	8	5	6.5	8	7.5
85	10	1	7.5	5.25	7	3.5	8	4
86	10	3	5	6.5	2	5.5	7	6
87	10	2.5	8	5	5.5	6	8.5	4
$g\overline{mf}$								
88	8	4	8.5	3.5	10	1	9	2.5
89	9.5	3.5	7.5	5.6	6	5	5	6.5
90	5	9.5	2.5	5	0	4	3.5	7
91	7.25	5.5	4	5.85	8	8.5	6	7.6
92	10	1	8	2.5	7	4.5	8	3
93	5.5	5.5	7	3.5	5	6.5	4.5	4
94	5.5	8	1.5	5	2	8.5	5	6
$\overline{gmf}$								
95	5	4.5	9.5	4	10	5	7	6.5
96	1	8	7.5	5	10	1.5	9	3
97	0	2.5	0	1.5	0	0.5	0	3
98	3.5	5	8	4	9.5	3.5	5	5
99	1	1.5	2	5	1.5	4	2	5
100	8	5.5	8	3	10	1	9	3

not different in any interesting or significant way. Thus, the instructions were not sufficiently detailed for the Ss to make the distinction between these two highly similar, but theoretically different concepts. Group 0* data have been excluded from the remainder of the analyses for this reason. The problem remains as to whether F (or 0) has any reality in the ratings of the sentences.

The medians of the medians for each group of sentences by the four groups of Ss are presented in Table 3. Also shown are the number of sentences in each group and the number of sentences for which the median rating for three groups of Ss (G* , M* , and F*) was in the predicted direction (above or below 5). The two extreme sets of sentences, gmf and $\overline{gmf}$, which were predicted to be rated highest and lowest on each scale, respectively, were in fact so rated. Although there were minor deviations from 10 and 0 on various scales for the individual sentences, Ss were able to rate these with almost complete agreement (Table 2).

Three other sets of sentences--$\bar{g}mf$, $g\overline{mf}$, and $\bar{g}\bar{m}f$--were also rated as predicted. In these three sets, the Ss in the various groups were able to establish, to some extent, the instructed dimensions and rated the sentences appropriately. However, they were not able to divorce themselves completely from the other two variables. It is of course possible that the theoretical dimensions which were implicitly hypothesized as independent are correlated in fact. A possible answer to this question will be found in the next section.

The remaining three sets of sentences were the combinations not used by Maclay and Sleator. In all three sets there was a contrast between the M and F variables. However, in all three instances there was a tie between the M and F variable--one affecting the other.

Table 3

Median Scale Values for Groups of Sentence Types

as a Function of the Instructions to Ss

Sentence Type	Sentences at Criteria	Sentences in Group	Instructions to Ss			
			G*	M*	F*	O*
gmf	15	15	10	10	10	10
$\bar{g}$mf	8	17	5	7·5	6	7
g$\bar{m}$f	8	15	5·5	1	0	2
$\bar{g}\bar{m}$f	9	15	2	6	3	3
$\bar{g}\bar{m}\bar{f}$	15	15	0	0	0	0·5
gm$\bar{f}$	2	10	9·75	7·25	5·75	8
g$\bar{m}$f	1	7	7·25	7	6	5
$\bar{g}\bar{m}$f	0	6	2·25	7·75	9·75	6

Thus, the sentences were reasonably effective in producing the kinds of variation desired. However, there were some discrepancies which may have been the result of the use of impure scaling dimensions by the Ss. A more precise determination of the effects of each variable was determined by the principal components analysis.

Principal components analysis. It is a basic theorem of principal components analysis that the principal components of a data matrix are simply described in terms of the characteristic roots and vectors of the cross-product matrices. (These cross-product matrices are themselves obtained by multiplying the data matrix by its transpose.) The importance of this theorem is that several numerical techniques exist for obtaining characteristic roots and vectors. Thus, it is possible to compute the desired factor scores and factor loadings.

The data for the three groups of Ss (G* , M* , and F*) were combined into an 84 Ss by 100 sentences matrix. The characteristic roots and vectors were obtained from the Ss by Ss cross-product matrix and the factor scores computed. The factor loadings were then determined via the inverse method. The characteristic roots are presented in decreasing order of magnitude in Table 4, with the proportion of "variability" accounted for by the corresponding prinicpal component presented in the right-hand column. Preliminary study indicated that the first four components were potentially interpretable. Thus the components accounted for 89.49% of the variability. To interpret the results of this type of analysis, some type of transformation is usually applied to the original loadings and scores. Geometrically, this corresponds to rotating the axes in the factor space and, as a consequence, the transformations are called rotations-orthogonal, if the factors remain uncorrelated, and oblique, otherwise.

Table 4

Characteristic Roots in Decreasing Order of Magnitude and Proportion of Variability Accounted For by Each

Roots	Proportion of Variability Accounted For
263866.5977	.8173
12887.1825	.0399
8385.3273	.0260
3777.3498	.0117
2831.9256	.0088
2145.0785	.0066
1873.1806	.0058
1678.1737	.0052
1539.0305	.0048
1274.2579	.0039
1154.6703	.0036
1117.4038	.0035
1060.3375	.0033
1016.1011	.0031
944.7022	.0029
918.5301	.0028
889.3641	.0028
846.3311	.0026
820.2197	.0025
750.6917	.0023
13063.4407[a]	.0006

[a]Sum of remaining 64 roots.

Several rotation schemes, both orthogonal and oblique, were attempted on the factor matrices. In each case one of the two matrices was rotated and the other determined by the transformation matrix. One orthogonal and one oblique solution is presented in both of which the sentence factors were rotated first and the subject factors determined second. In those rotations which first used the subject factors, only three factors were interpretable (the obvious result of only three groups of Ss). Those rotations which were based on the sentence factors resulted in four interpretable factors (discussed in detail below). Thus, only the latter rotations will be discussed.

Orthogonal rotation. A varimax criterion was used for the orthogonal rotation since we expected variables to load on more than one factor. The median factor loadings and scores for each set of sentences and groups of Ss are in Tables 5a and 5b, respectively. The complete set of factor loadings and scores is contained in Appendix C. The first sentence factor (Factor I) was interpreted as a general comprehensibility factor, relating simply to the number of variables--0, 1, 2, or 3--which had been violated; Mdn gmf = 3.138; Mdn $\overline{g}$mf , g$\overline{m}$f , and g$\overline{mf}$ = 1.304; Mdn g$\overline{mf}$, $\overline{g}$m$\overline{f}$, and $\overline{gm}$f = 0.356; and Mdn $\overline{gmf}$ = 0.092 (see Figure 1). Factor II was a syntactical factor indicating whether or not the G variable was deviant: Mdn g = 1.978; Mdn $\overline{g}$ = 0.256.[5] The third factor (Factor III) was interpreted as a meaningfulness factor relating to the M variable: Mdn m = 1.564 and Mdn $\overline{m}$ = 0.230. Factor IV was an unfamiliarity factor, producing large loadings if

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[5]Mdn g is used to indicate the median of the factor loadings for all syntactic sentences without regard to the values of M or F . Similar remarks hold for Mdn g , Mdn m , Mdn $\overline{m}$, Mdn f , etc.

Table 5a

Median Sentence Loadings by Sentence Types

After Varimax Rotation

Sentence Type	Factors I	II	III	IV
gmf	3.138	1.629	1.508	-0.138
$\bar{g}mf$	1.283	0.395	1.740	0.361
$gm\bar{f}$	0.047	2.146	0.230	1.285
$\bar{g}m\bar{f}$	0.412	0.115	2.154	1.166
$\overline{gmf}$	0.092	0.268	0.119	1.272
$gm\bar{f}$	1.515	2.349	0.556	0.224
$g\bar{m}f$	1.271	2.076	0.964	0.240
$\overline{gm}f$	3.087	0.116	0.461	0.983

Table 5b

Median Subject Scores by Instruction to Ss After

Varimax Rotation of Sentences

Instructions to Ss	Factors I	II	III	IV
Grammatical	1.439	1.973	0.843	-0.115
Meaningful	1.825	0.418	1.942	0.286
Familiar	2.257	0.471	0.986	0.115

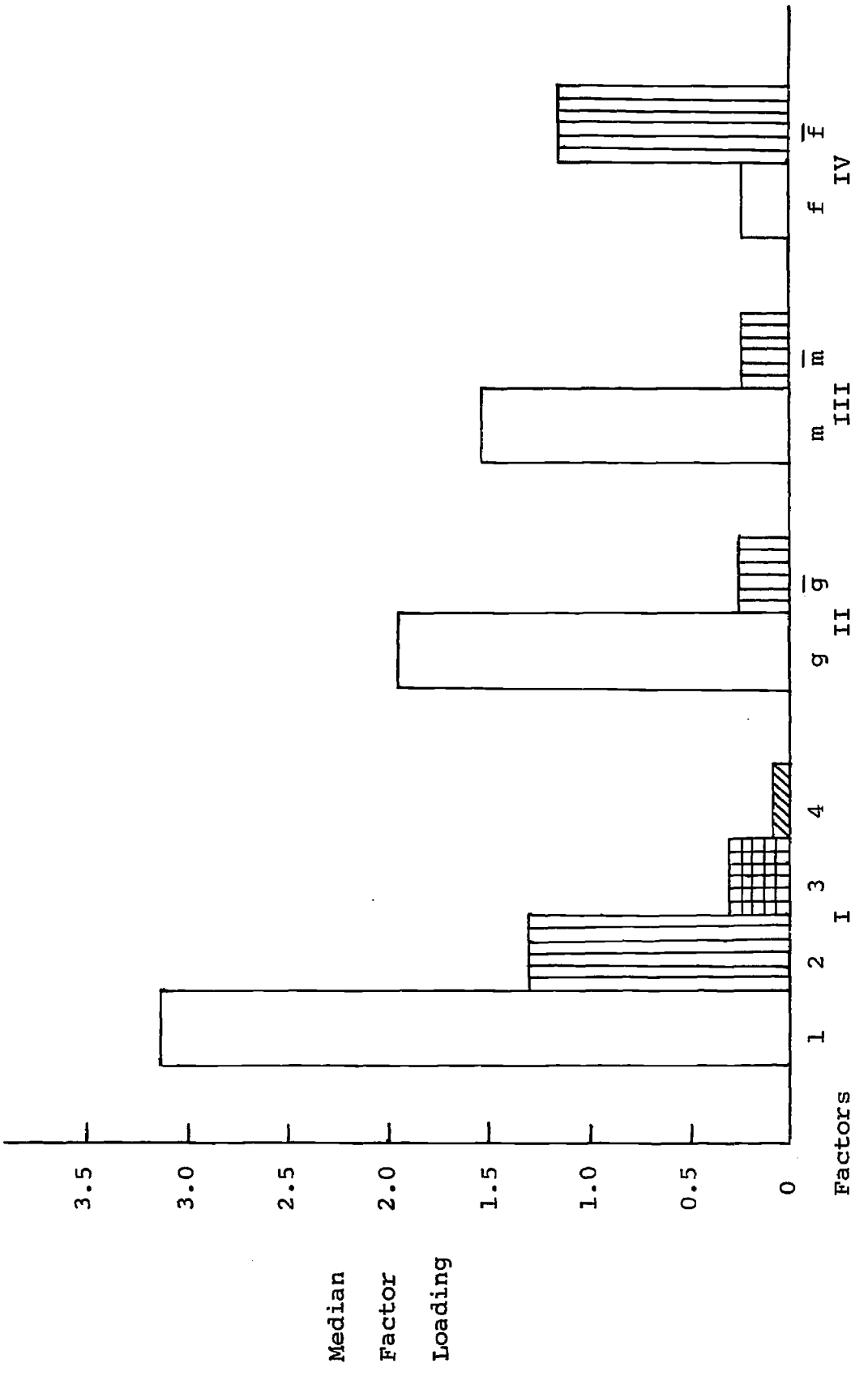

Figure 1. Median factor loadings of the groups related to each factor after an orthogonal rotation.

the sentence set was not familiar: Mdn f = 0.240 and Mdn $\bar{f}$ = 1.167. Although these interpretations of the factors are supported by the medians in Figure 1, the loadings of the individual sentences (Appendix C) and the median loadings for the eight groups (Table 5a) were not as well differentiated on the respective factors. This failure to confirm the predictions implicit in the assignment of the sentences to the various groups is due in part to the wide variety of sentences included in each group and in part to interactions between the variables. The latter point is discussed more fully in the Conclusions.

These interpretations were partially confirmed by the resultant factor scores. The G* Ss scored most heavily on Factor II and also had the highest score on Factor II, confirming the previous interpretation of Factor II as related to G . The M* Ss similarly scored heavily on Factor III, also confirming the interpretation of that factor as defining M . The F* Ss scored most on Factor I--general comprehensibility--and were the highest on that factor. Their score was quite neutral on Factor IV, which had previously been interpreted as related to F . This result then explains part of the difficulty in interpreting the scale value results. The F* Ss do not seem to have the same definition of familiarity as was used to construct the sentences. Their definition seems to be a composite of the three variables, as determined in the comprehensibility factor.

Oblique rotation. The oblique rotation used was from a program (ROTSIM) developed by K. Jöreskog. This program rotates to a set of correlated factors with the property that the sum of squares of the factor loadings which are hypothesized to be small is minimized.

The results of the rotation on the sentence loadings, the resultant subject scores, and the factor intercorrelation matrix are presented in Tables 6a, 6b, and 6c, respectively. The complete factor loadings and factor scores are in Appendix D. The interpretation of these factors was the same as that for the orthogonal rotation (see Figure 2 for medians).

Factor I--Comprehensibility	Mdn gmf = 6.512
	Mdn $\bar{g}mf$, $g\bar{m}f$, $gm\bar{f}$ = 3.876
	Mdn $g\bar{m}\bar{f}$, $\bar{g}m\bar{f}$, $\bar{g}\bar{m}f$ = 0.669
	Mdn $\bar{g}\bar{m}\bar{f}$ = 1.008
Factor II--Grammaticalness	Mdn g = 4.124
	Mdn $\bar{g}$ = 0.379
Factor III--Meaningfulness	Mdn m = 1.169
	Mdn $\bar{m}$ = 0.047
Factor IV--Unfamiliarity	Mdn f = -0.027
	Mdn $\bar{f}$ = 2.283

The factor scores, however, have lost some of their value as supporting evidence. Most upsetting is the negligible median loading of the G* Ss on Factor II. Of course, the factor scores did not enter into the criteria for either rotation, so this lack of support is not completely surprising.

Finally, it is worth noting that the factor intercorrelation matrix gives an extremely confusing picture of the relationships among the factors. These interpretations were again confirmed in the subject factors, except that the F* Ss score primarily on Factor I (Comprehensibility), as before.

Table 6a

Median Sentence Loadings by Sentence Types After Oblique (ROTSIM) Rotation

Sentence Type	Factors I	II	III	IV
gmf	6.512	3.547	0.988	-0.175
$\bar{g}mf$	2.937	0.562	1.651	-0.278
$gm\bar{f}$	1.190	4.673	-0.098	3.580
$\bar{g}m\bar{f}$	0.113	-0.167	2.329	1.002
$\overline{gmf}$	-1.008	0.476	0.059	2.264
$gm\bar{f}$	4.819	5.209	0.024	1.512
$\bar{g}mf$	4.143	4.422	0.511	1.202
$\overline{gmf}$	2.743	0.428	-0.024	0.348

Table 6b

Median Subject Scores by Instruction to Ss After Oblique (ROTSIM) Rotation of Sentences

Instructions to Ss	Factors I	II	III	IV
Grammatical	1.412	-0.050	0.430	0.999
Meaningful	2.012	-1.228	0.982	1.464
Familiar	2.450	-1.714	-0.004	1.649

Table 6c

Factor Intercorrelation Matrix Following Oblique (ROTSIM) Rotation of Sentences

Factors	I	II	III
II	-0.847		
III	-0.361	0.453	
IV	0.800	-0.810	-0.263

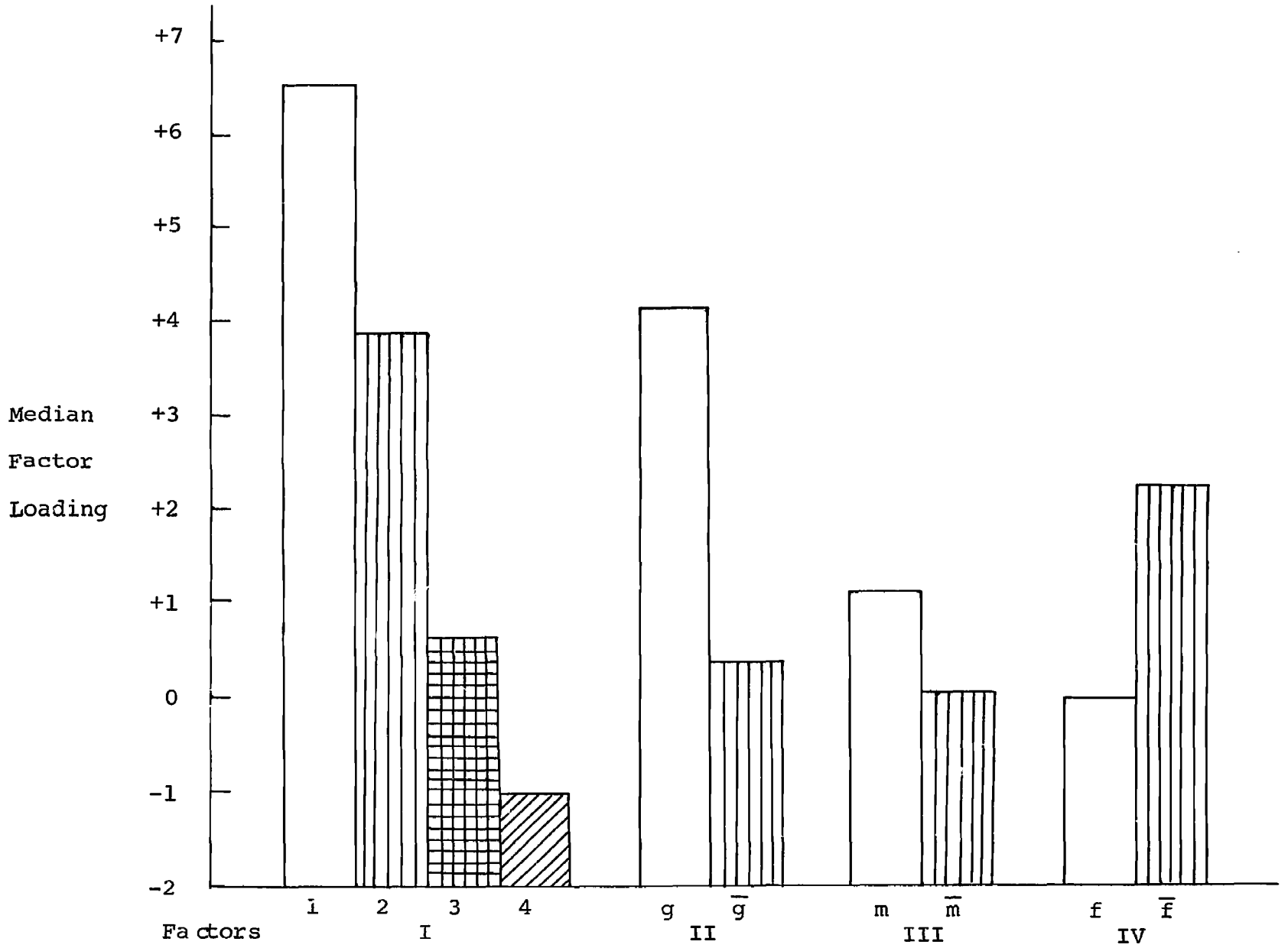

Figure 2. Median factor loadings of the groups related to each factor after an oblique rotation.

Conclusions

Not only were the G and M variables effective in producing predictable ratings, but also presumably pure factors of each were obtained. These factors provided loadings for comparing individual sentences on a given factor. Over the range of syntactic and semantic deviances employed, the Ss' identification of the relevant dimensions, i.e., from the instructions, was reasonably close to that assumed in the theoretical construction of the sentences.

The notable exceptions to these occurred in the $\bar{m}f$ groups. All of the major discrepancies from predictions occurred in relation to sentence types in which M and F were given opposite values, i.e., $\bar{m}f$ or $m\bar{f}$. Also the Ss given instructions to rate on the basis of F* , in contrast to G* and M* Ss, did not use the same F factor as was used in the construction of sentences. The results indicate that F is not independent of G and M , especially the latter, but is a second-order variable which is composed of several first-order variables including G and M .[6]

Let us consider the status of F in a bit more detail. The concept of "ordinariness" (O) as used by Maclay and Sleator was adapted to that of familiarity. Maclay and Sleator concluded that G , M , and O were independent. However, their technique was not adequately designed to provide a definite answer to the question of independence. As mentioned earlier, of the eight possible types of sentences used here (assuming F = O), the three

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[6] The naming of variables as first- and second-order is relative to this situation and is not intended to indicate primacy of G and M in any absolute sense (although such may in fact be the case).

types Maclay and Sleator omitted involved a contrast between M and O . In four of the five sentence types which they tested, M and O had equivalent values. Thus, $\overline{gmo}$ provides their only experimental test of the independence of M and O . Only 26% of the Ss said that $\overline{gmo}$ was meaningful and 4% said that it was ordinary. Although these distributions for meaningful and ordinary responses are significantly different (using χ^2 , $p < .01$), one can hardly conclude that such results confirm the independence of M and O because of the small percentage accepting $\overline{gmo}$ as meaningful.

In the present experiment, although F was an effective translation of O , the attempt to establish F as uncorrelated with M failed. In sentences where there was a M-F contrast, there was only a 32% success rate, as measured by the ratings--12 of 38 sentences failed to match the formula used in their construction. When there was no M-F contrast, the success rate was 74% (46 of 62, see Table 3). More detailed study of the ratings in Table 2 indicated that while an $\overline{mf}$ construction was attempted in 13 cases, only one case elicited the hypothesized M-F contrast. In the other 12 cases M and F were correlated.

Further evidence for the nonindependence of F is found in the factor scores for the Ss whose instructions were to rate on F* . These Ss scored most heavily on Factor I: Comprehensibility. With an orthogonal rotation their median score was in the middle of the three groups on Factor IV: unfamiliarity. And with the oblique rotation their score was highest (the opposite was expected) on Factor IV. Thus, the F* Ss were responding to some combination of variables which included G and M .

However, this evidence is not to imply that the F variable had no effect whatsoever. There are two points in particular where it did have an

effect. Factor IV was interpretable as unfamiliarity for the sentence loadings. Although it was not as "clean" as might be desired, it was reasonable to interpret it as such. Also, F added its weight to the determination of the Factor I loadings, along with G and M . The median factor loadings on Factor I for pairs of sentence types, differing only in F , are compared in Table 7. In each of the four pairs, the difference is significant. Thus, F did have an observable effect, although its effect was mixed with other factors.

The results provided justification for our use of the cross-product matrix in the analysis rather than the more common covariance or intercorrelation matrices. The evidence of a general factor corresponding roughly to the means of the individual sentence ratings (Factor I) was useful in interpreting the F* Ss and in evaluating the effectiveness of the F variables on sentence construction. While this general factor might be regarded as a statistical artifact associated with the variable means, in this case it has a very real meaning. Since the ratings for all sentences were supposedly on the same scale within a group of Ss, the means (or medians) of the sentences are directly comparable (as was discussed under Scale values). Thus, the particular measure of the relation between variables to be used must be selected, keeping in mind the properties which were designed into the procedure and which are expected in the resultant data.

As a final point, the orthogonal and oblique rotations should be compared. In general, there were no great differences among the factor loadings for the two solutions. On this basis alone, the simpler factor relationships implied by the orthogonal solution should make it preferable to the other. Upon noting the loss of the factor scores' value and the confusing factor relationships associated with the oblique solution, the picture becomes even

Table 7

Comparison of Pairs of Sentence Types,

Differing Only in f or $\bar{f}$

	f	$\bar{f}$	n_f	$n_{\bar{f}}$	U	$p <$
gm	3.138	1.515	15	10	17	.001
$\bar{g}m$	1.283	0.412	17	15	21	.001
$g\bar{m}$	1.271	0.047	7	15	13	.01
$\bar{g}\bar{m}$	3.087	0.092	6	15	0	.001

clearer. Although certainly not a definitive conclusion on the issue, this implied independence of G and M meshes well with the notion in linguistics that syntax and semantics are and should be described independently of one another.

References

Braine, M. D. S. The ontogeny of English phrase structure: The first phase. Language, 1963, 39, 113.

Brown, R., & Fraser, C. The acquisition of syntax. In C. N. Cofer & B. S. Musgrave (Eds.), Verbal behavior and learning. New York: McGraw-Hill, 1963. Pp. 158-209.

Chomsky, N. Syntactic structures. The Hague: Mouton, 1957.

Chomsky, N. Aspects of the theory of syntax. Cambridge, Mass.: MIT, 1965.

Coleman, E. B. Responses to a scale of grammaticalness. Journal of Verbal Learning and Verbal Behavior, 1965, 4, 521-527.

Danks, J. H. A psychological scale of grammaticalness. Unpublished minor research report, Psychology Library, Princeton University, 1967.

Danks, J. H. Some factors involved in the comprehension of deviant English sentences. Unpublished doctoral dissertation, Princeton University, 1968.

Gulliksen, H. Linear and multidimensional scaling. Psychometrika, 1961, 26, 9-25.

Hill, A. A. Grammaticality. Word, 1961, 17, 1-10.

Lakoff, G. On the nature of syntactic irregularity. Report No. NSF-16, Computation Laboratory, Harvard University, 1965.

Levin, S. R. Poetry and grammaticalness. In H. G. Lunt (Ed.), Proceedings of the Ninth International Congress of Linguists. The Hague: Mouton, 1964. Pp. 308-314.

Levin, S. R. Internal and external deviation in poetry. Word, 1965, 21, 225-237.

Maclay, H., & Sleator, M. D. Responses to language: Judgments of grammaticalness. International Journal of American Linguistics, 1960, 26, 275-280.

Marks, L. E. Psychological investigations of semi-grammaticalness in English. Unpublished doctoral dissertation, Harvard University, 1965.

Marks, L. E. Judgments of grammaticalness of some English sentences and semisentences. American Journal of Psychology, 1967, 80, 196-204. (a)

Marks, L. E. Some structural and sequential factors in the processing of sentences Journal of Verbal Learning and Verbal Behavior, 1967, 6, 707-713. (b)

Marks, L. E., & Miller, G. A. The role of semantic and syntactic constraints in the memorization of English sentences. Journal of Verbal Learning and Verbal Behavior, 1964, 3, 1-5.

Menyuk, P. Alternation of rules in children's grammar. Journal of Verbal Learning and Verbal Behavior, 1964, 3, 480-488.

Miller, G. A. Some psychological studies of grammar. American Psychologist, 1962, 16, 748-762.

Miller, G. A., & Chomsky, N. Finitary models of language users. In R. D. Luce, R. R. Bush, & E. Galanter (Eds.), Handbook of Mathematical Psychology, II. New York: Wiley, 1963. Pp. 419-491.

Postal, P. Constituent structure: A study of contemporary models of syntactic description. International Journal of American Linguistics, 1964, 30(1), Whole Part II. Publication 30 of Indiana University Research Center in Anthropology, Folklore and Linguistics.

Tucker, L. R. Dimensions of preference. Research Memorandum 60-7. Princeton, N. J.: Educational Testing Service, 1960.

APPENDIX A

Instructions for Each of the Four Groups--Grammaticalness, Meaningfulness, Familiarity, and Ordinariness, Respectively--Followed by the Random Order of the 100 Sentences

Name_____ Age_____

Native Language_____ Date_____

In this test we will try to measure how well you know the English language. On the following pages, there is a list of sentences. Some of them will be quite grammatical; others will not be grammatical at all. Your task is to rate the sentences on the following scale:

[0 1 2 3 4 5 6 7 8 9 10]
ungrammatical grammatical

If you think that the sentence is one of the most ungrammatical sentences possible, then you should rate it 0. However, if it is completely grammatical, then it is to be rated 10. Sentences falling in between these two extremes should be given appropriate ratings in the middle range of the scale. If you feel that the eleven categories provided are insufficient, please feel free to use decimal values between 0 and 10, in order to make finer discriminations. Before you make any ratings, read through the entire list of sentences, so that you know what kinds of sentences to expect. However, each sentence should be rated independently of those around it. There is no time limit. Be sure to rate every item.

Name_____ Age_____

Native Language_____ Date_____

In this test we will try to measure how well you know the English language. On the following pages, there is a list of sentences. Some of them will be quite meaningful; others will not be meaningful at all. Your task is to rate the sentences on the following scale:

[0 1 2 3 4 5 6 7 8 9 10]
non-meaningful meaningful

If you think that the sentence is one of the most non-meaningful sentences possible, then you should rate it 0. However, if it is completely meaningful, then it is to be rated 10. Sentences falling in between these two extremes should be given appropriate ratings in the middle range of the scale. If you feel that the eleven categories provided are insufficient, please feel free to use decimal values between 0 and 10, in order to make finer discriminations. Before you make any ratings, read through the entire list of sentences, so that you know what kinds of sentences to expect. However, each sentence should be rated independently of those around it. There is no time limit. Be sure to rate every item.

Name_____ Age_____

Native Language_____ Date_____

In this test we will try to measure how well you know the English language. On the following pages, there is a list of sentences. Some of them will be quite familiar; others will not be familiar at all. Your task is to rate the sentences on the following scale:

[0 1 2 3 4 5 6 7 8 9 10]
unfamiliar familiar

If you think that the sentence is one of the most unfamiliar sentences possible, then you should rate it 0. However, if it is completely familiar, then it is to be rated 10. Sentences falling in between these two extremes should be given appropriate ratings in the middle range of the scale. If you feel that the eleven categories provided are insufficient, please feel free to use decimal values between 0 and 10, in order to make finer discriminations. Before you make any ratings, read through the entire list of sentences, so that you know what kinds of sentences to expect. However, each sentence should be rated independently of those around it. There is no time limit. Be sure to rate every item.

Name_____ Age_____

Native Language_____ Date_____

In this test we will try to measure how well you know the English language. On the following pages, there is a list of sentences. Some of them will be quite ordinary; others will not be ordinary at all. Your task is to rate the sentences on the following scale:

[0 1 2 3 4 5 6 7 8 9 10]
unordinary ordinary

If you think that the sentence is one of the most unordinary sentences possible, then you should rate it 0. However, if it is completely ordinary, then it is to be rated 10. Sentences falling in between these two extremes should be given appropriate ratings in the middle range of the scale. If you feel that the eleven categories provided are insufficient, please feel free to use decimal values between 0 and 10, in order to make finer discriminations. Before you make any ratings, read through the entire list of sentences, so that you know what kinds of sentences to expect. However, each sentence should be rated independently of those around it. There is no time limit. Be sure to rate every item.

1____ Accidents pink storms sleeping cause.
2____ Bah, humbug.
3____ He'll have to go the doctors.
4____ Lighted cigarettes create smoky fumes.
5____ The archosourian ancestors are probably in the ophiocodont group.
6____ A rose is a rose is a rose.
7____ Natural being is a realm whose existential status is secondary.
8____ Tired windmills hinge a lot of elephants.
9____ The correlate of this consciousness is immanent temporality.
10____ I want a mild please.
11____ Dissolve appraisals gentlemen sighted furious.
12____ Furry wildcats fight furious battles.
13____ Create fumes cigarettes lighted smoky.
14____ About the time that the new models were shown.
15____ Bouquets pink odors fragrant emit.
16____ He growed up fast.
17____ Accurate gallant fight fumes detergents.
18____ Distressed gallant save damsels gentlemen.
19____ The protein network is composed of an amorphous matrix.
20____ I know which do they like.
21____ Not off bandage to now lake asked so is were.
22____ The chairman's most important job is timing.
23____ I wish I could write to each of you individually.
24____ Rapid deter sudden bouquets neighbors.
25____ Seventeen intuitions ate highly across the right.
26____ Neighbors sleeping noisy wake parties.
27____ All mimsy were the borogoves.
28____ Gallant detergents fight accurate fumes.
29____ Respectable jewelers give accurate appraisals.
30____ Who he is kissing?
31____ Rapid augur violent flashes storms.
32____ The surface area of silicic acid has been determined by absorption.
33____ In the world, given, flower maddened, Jehovah accept.
34____ Gallant gentlemen save distressed damsels.
35____ Melting snows cause sudden floods.
36____ Damsels smoky soapy give wildcats.
37____ Within you and without you.
38____ The medium is the massage.
39____ Fatal snows wake violent odors.
40____ Stains greasy soapy dissolve detergents.
41____ Probably, although he may surprise us.
42____ Soapy detergents dissolve greasy stains.
43____ The mome raths outgrabe.
44____ Wake odors snows fatal violent.
45____ Yesterday, I the child a dog gave.
46____ Hutsut ralston on the rillera.
47____ Take off it.
48____ Jewelers respectable appraisals accurate give.
49____ Ought cool send had grand the respiratory.
50____ Rapid bouquets deter sudden neighbors.

Continue to next page.

51____ The kind of person who learns to talk with the natives.
52____ Pink bouquets emit fragrant odors.
53____ He was ready to go.
54____ May the hair on your feet grow long.
55____ Pink accidents cause sleeping storms.
56____ Get me from the kitchen a big spoon.
57____ You can him not understand.
58____ Respectable cigarettes save greasy battles.
59____ The segmentally ganglionated nerve cord was mapped.
60____ Lucy in the sky with diamonds.
61____ It was snow yesterday.
62____ He'll might get in jail.
63____ Put the hat.
64____ During dishing, tolerant marbles remarked off.
65____ Melting parties augur fragrant drivers.
66____ Sensation can be anonymous only because it is incomplete.
67____ Intellectualism remains anterior to the problem of oriented space.
68____ Furry fight furious wildcats battles.
69____ Fatal accidents deter careful drivers.
70____ Fragrant melting augur drivers parties.
71____ Numerous other countries will be represented.
72____ They finished it yesterday.
73____ The with feet aching man came yesterday home.
74____ Noisy flashes emit careful floods.
75____ Extra rivers wished casually to cancel off.
76____ Rapid flashes augur violent storms.
77____ Label break to calmed about and.
78____ Vernier acuities are inseparable for test targets.
79____ Deter drivers accidents fatal careful.
80____ Floods careful noisy emit flashes.
81____ A keeps changed very when.
82____ Give me some soaps.
83____ A house is a representation, the transcendental object is unknown.
84____ Tables down cod ashes rock under off two syrup.
85____ Soapy wild cats give smoky damsels.
86____ Cigarettes respectable battles greasy save.
87____ Him is a bad boy.
88____ Noisy parties wake sleeping neighbors.
89____ To me was interesting the movie.
90____ 'Twas brillig, and the slithy toves did gyre and gimble.
91____ Not if I have anything to do with it.
92____ Furry jewelers create distressed stains.
93____ Rah, rah, siz, boom, bah.
94____ Appointments can now winters generously.
95____ Furry create distressed jewelers stains.
96____ Sudden melting cause floods snows.
97____ Lighted gentlemen dissolve furious appraisals.
98____ The key is in the sunlight at the window in the bars.
99____ She has lots of necklace.
100____ In order to get there before they close.

Check each of the above sentences to make sure each has been rated, but do not change any answers.

APPENDIX B

Complete Raw Data Matrix

G* = 101-128; M* = 201-228; F* = 301-328; O* = 401-428

	LABEL	GMF 1	GMF 2	GMF 3	GMF 4	GMF 5	GMF 6	GMF 7	GMF 8	GMF 9	GMF 10
1	101	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
2	102	8.0000	10.0000	10.0000	10.0000	10.0000	4.0000	10.0000	9.0000	9.0000	10.0000
3	103	6.0000	8.0000	10.0000	10.0000	10.0000	4.0000	10.0000	10.0000	10.0000	10.0000
4	104	10.0000	8.0000	9.0000	7.0000	8.0000	6.0000	8.0000	10.0000	10.0000	10.0000
5	105	7.0000	9.0000	9.0000	9.0000	10.0000	2.0000	10.0000	10.0000	10.0000	10.0000
6	106	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
7	107	8.0000	10.0000	10.0000	9.0000	9.0000	8.0000	10.0000	9.0000	10.0000	10.0000
8	108	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	3.0000	10.0000	10.0000
9	109	7.0000	10.0000	9.0000	10.0000	10.0000	2.0000	10.0000	10.0000	9.0000	10.0000
10	110	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	2.0000	10.0000	10.0000
11	111	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000	10.0000
12	112	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
13	113	10.0000	9.0000	1.0000	5.0000	6.0000	6.0000	7.0000	4.0000	9.0000	5.0000
14	114	10.0000	8.5000	10.0000	10.0000	10.0000	10.0000	8.0000	9.0000	10.0000	10.0000
15	115	10.0000	10.0000	8.0000	10.0000	10.0000	7.0000	10.0000	9.0000	10.0000	9.0000
16	116	10.0000	10.0000	10.0000	10.0000	10.0000	1.0000	4.0000	7.0000	3.0000	10.0000
17	117	9.0000	10.0000	7.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	10.0000
18	118	10.0000	10.0000	10.0000	10.0000	10.0000	6.0000	10.0000	9.5000	10.0000	10.0000
19	119	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	10.0000	10.0000	10.0000	10.0000
20	120	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	10.0000	10.0000	7.0000	10.0000
21	121	10.0000	10.0000	9.0000	10.0000	10.0000	7.0000	10.0000	8.0000	10.0000	10.0000
22	122	9.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	10.0000	10.0000	8.0000
23	123	9.0000	8.0000	10.0000	10.0000	10.0000	2.0000	10.0000	10.0000	10.0000	10.0000
24	124	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
25	125	8.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	10.0000	0.0000	10.0000	10.0000
26	126	10.0000	10.0000	10.0000	10.0000	10.0000	1.0000	10.0000	9.0000	9.0000	10.0000
27	127	10.0000	9.0000	9.0000	10.0000	10.0000	10.0000	10.0000	4.0000	10.0000	10.0000
28	128	10.0000	9.0000	8.0000	9.0000	10.0000	1.0000	6.0000	5.0000	10.0000	5.0000
29	201	10.0000	9.0000	10.0000	9.0000	10.0000	5.0000	8.0000	-0.0000	10.0000	10.0000
30	202	10.0000	8.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	10.0000	10.0000
31	203	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	10.0000	10.0000
32	204	7.0000	6.0000	5.0000	5.0000	6.0000	8.0000	7.0000	8.0000	7.0000	9.0000
33	205	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	3.0000	10.0000	10.0000
34	206	8.0000	8.0000	9.0000	9.0000	9.0000	7.0000	10.0000	7.5000	8.0000	10.0000
35	207	10.0000	10.0000	10.0000	10.0000	10.0000	4.0000	10.0000	7.0000	10.0000	10.0000
36	208	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000
37	209	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000
38	210	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	-0.0000	10.0000	10.0000
39	211	10.0000	8.0000	10.0000	10.0000	10.0000	3.0000	9.0000	4.0000	5.0000	10.0000
40	212	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
41	213	10.0000	8.0000	5.0000	4.0000	6.0000	9.0000	5.0000	9.0000	10.0000	9.0000
42	214	10.0000	10.0000	10.0000	10.0000	10.0000	2.0000	10.0000	10.0000	10.0000	10.0000
43	215	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	7.0000	10.0000	9.0000
44	216	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.5000	10.0000	10.0000
45	217	9.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	7.0000	9.0000	10.0000
46	218	10.0000	9.0000	10.0000	10.0000	10.0000	4.0000	10.0000	8.0000	10.0000	10.0000
47	219	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	10.0000	5.0000	10.0000	10.0000
48	220	8.0000	8.0000	8.0000	8.0000	8.0000	10.0000	10.0000	7.0000	10.0000	10.0000
49	221	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	10.0000	10.0000	10.0000	10.0000
50	222	10.0000	10.0000	7.0000	8.0000	8.0000	2.0000	10.0000	1.0000	10.0000	10.0000

	LABEL	GMF 1	GMF 2	GMF 3	GMF 4	GMF 5	GMF 6	GMF 7	GMF 8	GMF 9	GMF 10
51	223	8.0000	10.0000	9.0000	9.0000	9.0000	0.0000	8.0000	0.0000	9.0000	9.0000
52	224	10.0000	10.0000	9.0000	9.0000	10.0000	2.0000	10.0000	3.0000	10.0000	10.0000
53	225	10.0000	9.0000	10.0000	10.0000	10.0000	1.0000	5.0000	5.0000	10.0000	9.2000
54	226	10.0000	10.0000	8.0000	1.0000	10.0000	1.0000	10.0000	3.0000	10.0000	10.0000
55	227	9.0000	8.0000	2.0000	5.0000	10.0000	0.0000	2.0000	9.0000	9.0000	9.0000
56	228	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
57	301	3.0000	1.0000	8.0000	4.0000	10.0000	5.0000	3.0000	2.0000	8.0000	5.0000
58	302	3.0000	9.0000	9.0000	10.0000	10.0000	0.0000	8.0000	0.0000	10.0000	9.0000
59	303	8.0000	8.0000	10.0000	10.0000	10.0000	3.0000	6.0000	2.0000	10.0000	8.0000
60	304	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	8.0000	10.0000	10.0000
61	305	9.0000	4.0000	10.0000	10.0000	10.0000	1.0000	10.0000	9.0000	9.0000	9.0000
62	306	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	10.0000	9.0000	10.0000	10.0000
63	307	10.0000	10.0000	10.0000	10.0000	10.0000	0.0000	9.0000	8.0000	10.0000	10.0000
64	308	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	10.0000	10.0000
65	309	8.0000	8.0000	10.0000	10.0000	10.0000	2.0000	9.0000	8.0000	10.0000	10.0000
66	310	10.0000	10.0000	9.0000	10.0000	10.0000	0.0000	9.0000	8.0000	10.0000	9.0000
67	311	0.0000	3.0000	1.0000	1.0000	1.0000	1.0000	2.0000	1.0000	1.0000	1.0000
68	312	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	10.0000
69	313	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
70	314	10.0000	10.0000	9.0000	10.0000	10.0000	1.0000	6.0000	9.0000	7.0000	10.0000
71	315	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	9.0000	10.0000	10.0000
72	316	9.0000	8.0000	10.0000	10.0000	9.0000	4.0000	7.0000	5.0000	8.0000	8.0000
73	317	9.0000	9.0000	8.0000	9.0000	10.0000	4.0000	8.0000	8.0000	8.0000	9.0000
74	318	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	9.0000	10.0000	10.0000
75	319	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	8.0000	9.0000	10.0000	10.0000
76	320	10.0000	9.0000	10.0000	10.0000	10.0000	8.0000	10.0000	10.0000	10.0000	10.0000
77	321	8.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	10.0000	10.0000
78	322	8.0000	8.0000	8.0000	8.0000	10.0000	0.0000	2.0000	2.0000	6.0000	5.0000
79	323	10.0000	2.0000	9.0000	10.0000	10.0000	4.0000	10.0000	3.0000	10.0000	6.0000
80	324	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	9.0000	2.0000	9.0000	10.0000
81	325	8.0000	8.0000	10.0000	10.0000	10.0000	5.0000	10.0000	5.0000	10.0000	10.0000
82	326	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	10.0000	2.0000	10.0000	10.0000
83	327	10.0000	10.0000	9.0000	10.0000	10.0000	7.0000	10.0000	10.0000	10.0000	10.0000
84	328	10.0000	6.0000	10.0000	10.0000	10.0000	5.0000	10.0000	9.0000	10.0000	10.0000

	LABEL	GMF 11	GMF 12	GMF 13	GMF 14	GMF 15	-MF 16	-MF 17	-MF 18	-MF 19	-MF 20
1	101	10.0000	10.0000	10.0000	10.0000	10.0000	6.0000	8.0000	5.0000	5.0000	4.0000
2	102	7.0000	10.0000	9.0000	10.0000	10.0000	9.0000	10.0000	2.0000	5.0000	8.0000
3	103	10.0000	10.0000	3.0000	10.0000	10.0000	4.0000	-0.0000	-0.0000	-0.0000	-0.0000
4	104	8.0000	10.0000	8.0000	10.0000	7.0000	6.0000	2.0000	4.0000	5.0000	-0.0000
5	105	8.0000	10.0000	10.0000	10.0000	10.0000	9.0000	7.0000	1.0000	8.0000	4.0000
6	106	10.0000	10.0000	10.0000	10.0000	10.0000	4.0000	4.0000	3.0000	3.0000	3.0000
7	107	9.0000	10.0000	9.0000	10.0000	9.0000	8.0000	7.0000	8.0000	9.0000	9.0000
8	108	7.0000	10.0000	10.0000	10.0000	10.0000	8.0000	8.0000	4.0000	6.0000	4.0000
9	109	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	2.0000	5.0000	5.0000
10	110	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	7.0000	4.0000	-0.0000	6.0000
11	111	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	5.0000	4.0000	5.0000	5.0000
12	112	10.0000	10.0000	9.0000	10.0000	10.0000	4.0000	1.0000	1.0000	1.0000	1.0000
13	113	6.0000	5.0000	9.0000	7.0000	8.0000	2.0000	1.0000	1.0000	3.0000	2.0000
14	114	10.0000	10.0000	9.0000	10.0000	10.0000	7.0000	6.0000	-0.0000	3.5000	6.5000
15	115	3.0000	10.0000	10.0000	10.0000	10.0000	7.0000	-0.0000	5.0000	7.0000	7.0000
16	116	7.0000	4.0000	9.0000	4.0000	8.0000	10.0000	9.0000	9.0000	3.0000	4.0000
17	117	10.0000	10.0000	9.0000	10.0000	10.0000	7.0000	6.0000	3.0000	6.0000	6.0000
18	118	9.0000	10.0000	10.0000	10.0000	10.0000	6.0000	8.0000	4.0000	6.0000	7.0000
19	119	10.0000	10.0000	10.0000	10.0000	10.0000	7.0000	6.0000	6.0000	9.0000	4.0000
20	120	10.0000	10.0000	7.0000	10.0000	10.0000	6.0000	7.0000	3.0000	4.0000	2.0000
21	121	10.0000	10.0000	4.0000	10.0000	10.0000	9.0000	9.0000	4.0000	6.0000	7.0000
22	122	10.0000	10.0000	9.0000	10.0000	10.0000	8.0000	10.0000	3.0000	10.0000	7.0000
23	123	9.0000	10.0000	10.0000	10.0000	10.0000	5.0000	3.0000	-0.0000	5.0000	-0.0000
24	124	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
25	125	-0.0000	10.0000	3.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	1.0000	-0.0000
26	126	9.0000	10.0000	10.0000	10.0000	10.0000	8.0000	9.0000	8.0000	8.0000	7.0000
27	127	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	6.0000	9.0000	8.0000	7.0000
28	128	8.0000	9.0000	10.0000	7.0000	8.0000	7.0000	8.0000	-0.0000	5.0000	4.0000
29	201	4.0000	10.0000	5.0000	9.0000	10.0000	10.0000	8.0000	7.0000	10.0000	10.0000
30	202	10.0000	10.0000	7.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	10.0000
31	203	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
32	204	5.0000	8.0000	6.0000	7.0000	8.0000	10.0000	4.0000	3.0000	5.0000	5.0000
33	205	8.0000	10.0000	8.0000	10.0000	10.0000	5.0000	9.0000	10.0000	10.0000	10.0000
34	206	6.0000	9.0000	7.0000	9.0000	8.0000	6.0000	6.0000	7.0000	7.0000	6.5000
35	207	9.0000	10.0000	10.0000	10.0000	10.0000	6.0000	7.0000	3.0000	6.0000	6.0000
36	208	10.0000	10.0000	10.0000	10.0000	10.0000	2.0000	6.0000	5.0000	7.0000	4.0000
37	209	5.0000	10.0000	9.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000
38	210	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	8.7000	9.0000	9.0000	9.0000
39	211	3.0000	9.0000	3.0000	8.0000	10.0000	6.0000	6.0000	8.0000	10.0000	9.0000
40	212	7.0000	10.0000	10.0000	10.0000	10.0000	9.0000	8.0000	8.0000	9.0000	8.0000
41	213	8.0000	10.0000	9.0000	5.0000	9.0000	5.0000	5.0000	-0.0000	5.0000	3.0000
42	214	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	10.0000	9.0000
43	215	6.0000	10.0000	8.0000	9.0000	10.0000	9.0000	9.0000	9.0000	10.0000	8.0000
44	216	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	5.0000	7.0000	8.0000
45	217	7.0000	10.0000	7.0000	9.0000	10.0000	9.0000	10.0000	10.0000	8.0000	10.0000
46	218	3.0000	10.0000	8.0000	9.0000	9.0000	10.0000	6.0000	5.0000	5.0000	10.0000
47	219	6.0000	10.0000	8.0000	10.0000	10.0000	9.0000	9.0000	3.0000	4.0000	9.0000
48	220	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	3.0000	3.0000	6.0000	4.0000
49	221	10.0000	10.0000	7.0000	10.0000	10.0000	10.0000	7.0000	5.0000	10.0000	10.0000
50	222	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	7.0000	10.0000	9.0000

	LABEL	GMF 11	GMF 12	GMF 13	GMF 14	GMF 15	-MF 16	-MF 17	-MF 18	-MF 19	-MF 20
51	223	1.0000	9.0000	9.0000	9.0000	9.0000	9.0000	9.0000	8.0000	8.0000	9.0000
52	224	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	3.0000	7.0000	8.0000	7.0000
53	225	5.0000	10.0000	8.0000	9.0000	9.0000	10.0000	3.0000	5.0000	6.0000	8.0000
54	226	9.0000	10.0000	10.0000	10.0000	10.0000	2.0000	10.0000	-0.0000	4.0000	-0.0000
55	227	2.0000	9.0000	8.0000	7.0000	3.0000	10.0000	10.0000	5.0000	10.0000	10.0000
56	228	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	7.0000	9.0000
57	301	1.0000	6.0000	3.0000	1.0000	8.0000	7.0000	6.0000	4.0000	6.0000	6.0000
58	302	3.0000	9.0000	3.0000	9.0000	4.0000	10.0000	8.0000	10.0000	9.0000	9.0000
59	303	3.0000	10.0000	4.0000	6.0000	7.0000	10.0000	10.0000	6.0000	8.0000	4.0000
60	304	4.0000	10.0000	5.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
61	305	6.0000	9.8000	9.2000	4.0000	10.0000	10.0000	4.0000	8.0000	10.0000	10.0000
62	306	9.0000	10.0000	8.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
63	307	8.0000	10.0000	7.0000	10.0000	10.0000	10.0000	10.0000	9.0000	6.0000	10.0000
64	308	1.0000	9.0000	5.0000	10.0000	10.0000	10.0000	10.0000	8.0000	9.0000	10.0000
65	309	9.0000	10.0000	8.0000	10.0000	8.0000	10.0000	6.0000	10.0000	9.0000	10.0000
66	310	9.0000	10.0000	9.0000	10.0000	9.0000	10.0000	9.0000	9.0000	8.0000	10.0000
67	311	2.0000	1.0000	1.0000	3.0000	1.0000	1.0000	3.0000	3.0000	3.0000	1.0000
68	312	9.0000	10.0000	8.0000	10.0000	10.0000	10.0000	9.0000	9.0000	9.0000	10.0000
69	313	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	8.0000	9.0000	10.0000
70	314	7.0000	6.0000	7.0000	7.0000	7.0000	10.0000	9.0000	8.0000	6.0000	10.0000
71	315	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	7.0000	5.0000
72	316	7.0000	9.0000	7.0000	6.0000	8.0000	10.0000	9.0000	9.0000	7.0000	9.0000
73	317	6.0000	8.0000	8.0000	8.0000	9.0000	9.0000	7.0000	7.0000	9.0000	9.0000
74	318	8.0000	10.0000	8.0000	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
75	319	7.0000	10.0000	8.0000	9.0000	9.0000	10.0000	9.0000	4.0000	8.0000	4.0000
76	320	1.0000	10.0000	2.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000
77	321	4.0000	10.0000	5.0000	10.0000	10.0000	10.0000	0.0000	10.0000	10.0000	10.0000
78	322	3.0000	6.0000	7.0000	6.0000	6.0000	10.0000	5.0000	7.0000	5.0000	10.0000
79	323	4.0000	2.0000	6.0000	8.0000	7.0000	10.0000	10.0000	7.0000	6.0000	10.0000
80	324	10.0000	10.0000	9.0000	9.0000	10.0000	10.0000	10.0000	9.0000	8.0000	10.0000
81	325	1.0000	8.0000	3.0000	10.0000	10.0000	10.0000	10.0000	5.0000	5.0000	10.0000
82	326	8.0000	10.0000	8.0000	5.0000	10.0000	10.0000	10.0000	2.0000	5.0000	8.0000
83	327	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000
84	328	7.0000	10.0000	5.0000	5.0000	10.0000	10.0000	9.0000	9.0000	9.0000	10.0000

	LABEL	-MF 21	-MF 22	-MF 23	-MF 24	-MF 25	-MF 26	-MF 27	-MF 28	-MF 29	-MF 30
1	101	5.0000	8.0000	10.0000	3.0000	8.0000	7.0000	5.0000	2.0000	7.0000	8.0000
2	102	6.0000	7.0000	4.0000	4.0000	7.0000	10.0000	9.0000	-0.0000	5.0000	5.0000
3	103	-0.0000	2.0000	3.0000	-0.0000	7.0000	4.0000	2.0000	4.0000	5.0000	2.0000
4	104	3.0000	8.0000	-0.0000	-0.0000	2.0000	8.0000	1.0000	-0.0000	6.0000	4.0000
5	105	7.0000	9.0000	4.0000	6.0000	7.0000	5.0000	8.0000	9.0000	8.0000	7.0000
6	106	6.0000	8.0000	9.0000	9.0000	9.0000	9.0000	9.0000	9.0000	7.0000	9.0000
7	107	3.0000	7.0000	6.0000	3.0000	4.0000	9.0000	4.0000	4.0000	8.0000	4.0000
8	108	1.0000	5.0000	5.0000	2.0000	-0.0000	3.0000	3.0000	-0.0000	6.0000	2.0000
9	109	3.0000	10.0000	4.0000	-0.0000	4.0000	10.0000	10.0000	10.0000	7.0000	2.0000
10	110	8.0000	8.0000	-0.0000	8.0000	4.0000	6.0000	8.0000	5.0000	8.0000	9.0000
11	111	2.0000	8.0000	8.0000	2.0000	6.0000	5.0000	8.0000	7.0000	9.0000	10.0000
12	112	-0.0000	2.0000	-0.0000	-0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
13	113	1.0000	1.0000	2.0000	1.0000	2.0000	3.0000	1.0000	5.0000	2.0000	6.0000
14	114	4.0000	9.0000	5.0000	3.0000	7.5000	6.5000	7.0000	4.5000	5.0000	6.5000
15	115	3.0000	10.0000	9.0000	5.0000	3.0000	9.0000	7.0000	3.0000	5.0000	9.0000
16	116	-0.0000	6.0000	2.0000	-0.0000	4.0000	6.0000	3.0000	-0.0000	-0.0000	-0.0000
17	117	3.0000	8.0000	9.0000	1.0000	4.0000	3.0000	2.0000	4.0000	2.0000	8.0000
18	118	7.0000	10.0000	6.0000	6.0000	7.0000	7.0000	8.0000	9.0000	8.0000	9.0000
19	119	8.0000	3.0000	7.0000	7.0000	8.0000	8.0000	7.0000	10.0000	9.0000	9.0000
20	120	2.0000	10.0000	2.0000	2.0000	3.0000	4.0000	1.0000	3.0000	1.0000	5.0000
21	121	7.0000	8.0000	6.0000	6.0000	6.0000	9.0000	6.0000	10.0000	6.0000	8.0000
22	122	6.0000	9.0000	9.0000	3.0000	7.0000	7.0000	10.0000	-0.0000	9.0000	8.0000
23	123	4.0000	8.0000	3.0000	2.0000	4.0000	4.0000	4.0000	3.0000	2.0000	4.0000
24	124	-0.0000	10.0000	-0.0000	10.0000	5.0000	10.0000	10.0000	10.0000	10.0000	10.0000
25	125	-0.0000	9.0000	-0.0000	-0.0000	-0.0000	-0.0000	1.0000	-0.0000	-0.0000	-0.0000
26	126	5.0000	8.0000	6.0000	8.0000	5.0000	8.0000	8.0000	9.0000	7.0000	8.0000
27	127	6.0000	5.0000	7.0000	5.0000	6.0000	7.0000	7.0000	7.0000	8.0000	7.0000
28	128	6.9000	3.0000	4.0000	1.0000	6.0000	6.0000	3.0000	4.0000	6.0000	2.0000
29	201	4.0000	9.0000	-0.0000	5.0000	6.0000	5.0000	4.0000	3.0000	4.0000	5.0000
30	202	9.0000	10.0000	4.0000	9.0000	8.0000	9.0000	8.0000	8.0000	9.0000	9.0000
31	203	6.0000	9.0000	7.0000	5.0000	7.0000	8.0000	7.0000	5.0000	8.0000	7.0000
32	204	2.0000	4.0000	1.0000	1.0000	6.0000	10.0000	4.0000	-0.0000	3.0000	2.0000
33	205	7.0000	10.0000	-0.0000	6.0000	2.0000	9.0000	9.0000	9.0000	6.0000	10.0000
34	206	6.0000	8.0000	4.0000	4.0000	7.5000	8.0000	7.0000	5.0000	6.6000	5.0000
35	207	8.0000	9.0000	3.0000	7.0000	8.0000	8.0000	7.0000	7.0000	9.0000	9.0000
36	208	2.0000	8.0000	9.7000	1.0000	6.0000	10.0000	5.0000	1.0000	3.0000	2.0000
37	209	6.0000	10.0000	8.0000	6.0000	6.0000	10.0000	6.0000	6.0000	9.0000	9.0000
38	210	9.1000	10.0000	3.5000	8.0000	1.0000	9.0000	9.7000	0.3000	9.0000	10.0000
39	211	1.0000	10.0000	0.0000	1.0000	1.0000	10.0000	6.0000	1.0000	3.0000	9.0000
40	212	8.0000	10.0000	7.0000	6.0000	7.0000	8.0000	9.0000	7.0000	8.0000	9.0000
41	213	-0.0000	3.0000	-0.0000	-0.0000	3.0000	5.0000	9.0000	6.0000	3.0000	3.0000
42	214	1.0000	5.0000	2.0000	6.0000	-0.0000	2.0000	2.0000	-0.0000	8.0000	7.0000
43	215	7.0000	8.0000	-0.0000	-0.0000	7.0000	6.0000	7.0000	8.0000	5.0000	8.0000
44	216	8.7000	8.0000	8.0000	7.8000	8.0000	6.0000	9.0000	8.0000	8.5000	8.0000
45	217	8.0000	10.0000	5.0000	6.0000	4.0000	8.0000	10.0000	8.0000	7.0000	9.0000
46	218	10.0000	9.0000	2.0000	-0.0000	7.0000	10.0000	10.0000	10.0000	10.0000	10.0000
47	219	5.0000	9.0000	4.0000	4.0000	1.0000	9.0000	9.0000	9.0000	8.0000	10.0000
48	220	8.0000	2.0000	8.0000	1.0000	7.0000	7.0000	8.0000	1.0000	6.0000	6.0000
49	221	-0.0000	8.0000	2.0000	0.0000	3.0000	7.0000	2.0000	-0.0000	5.0000	7.0000
50	222	8.0000	7.0000	8.0000	6.0000	10.0000	10.0000	9.0000	10.0000	9.0000	9.0000

Appendix B1 (Contd)

	LABEL	-MF 21	-MF 22	-MF 23	-MF 24	-MF 25	-MF 26	-MF 27	-MF 28	-MF 29	-MF 30
51	223	-0.0000	10.0000	7.0000	-0.0000	-0.0000	9.0000	0.0000	0.0000	0.0000	-0.0000
52	224	8.0000	10.0000	0.0000	5.0000	4.0000	10.0000	8.0000	8.0000	8.0000	7.0000
53	225	9.0000	9.0000	2.0000	0.0000	7.0000	10.0000	9.0000	9.0000	1.0000	7.0000
54	226	9.0000	9.0000	4.0000	5.0000	2.0000	10.0000	9.0000	9.0000	2.0000	6.0000
55	227	3.0000	10.0000	7.0000	2.0000	10.0000	10.0000	4.0000	7.0000	0.0000	4.0000
56	228	7.0000	10.0000	8.0000	7.0000	8.0000	8.0000	8.0000	5.0000	7.0000	10.0000
57	301	9.0000	4.0000	5.0000	2.0000	1.0000	5.0000	6.0000	3.0000	0.0000	2.0000
58	302	-0.0000	8.0000	3.0000	2.0000	2.0000	2.0000	-0.0000	1.0000	-0.0000	0.0000
59	303	2.0000	1.0000	0.0000	0.0000	1.0000	3.0000	2.0000	1.0000	0.0000	0.0000
60	304	-0.0000	10.0000	7.0000	8.0000	6.0000	5.0000	-0.0000	-0.0000	2.0000	8.0000
61	305	10.0000	9.3000	5.0000	3.0000	5.0000	10.0000	8.0000	10.0000	10.0000	3.0000
62	306	7.0000	8.0000	4.0000	5.0000	7.0000	9.0000	8.0000	8.0000	8.0000	9.0000
63	307	9.0000	9.9000	8.0000	7.0000	7.0000	9.5000	9.00 0	9.5000	5.0000	9.9000
64	308	5.0000	7.0000	8.0000	3.0000	6.0000	10.0000	5.0000	7.0000	6.0000	8.0000
65	309	-0.0000	-0.0000	5.0000	10.0000	-0.0000	8.0000	-0.0000	-0.0000	-0.0000	1.0000
66	310	4.0000	10.0000	0.0000	4.0000	6.0000	6.0000	4.0000	10.0000	4.0000	9.0000
67	311	5.0000	2.0000	9.0000	4.0000	4.0000	1.0000	1.0000	-0.0000	2.0000	2.0000
68	312	2.0000	2.0000	1.0000	1.0000	1.0000	7.0000	6.0000	2.0000	5.0000	7.0000
69	313	5.0000	10.0000	9.0000	5.0000	9.0000	9.0000	9.0000	9.0000	9.0000	8.0000
70	314	6.0000	8.0000	4.0000	6.0000	5.0000	10.0000	8.0000	4.0000	9.0000	8.0000
71	315	3.0000	8.0000	6.0000	0.0000	5.0000	5.0000	3.0000	7.0000	5.0000	7.0000
72	316	3.0000	3.0000	3.0000	2.0000	3.0000	7.0000	6.0000	3.0000	7.0000	2.0000
73	317	5.0000	9.0000	5.0000	4.0000	5.0000	9.0000	5.0000	10.0000	7.0000	7.0000
74	318	5.0000	10.0000	6.0000	6.0000	6.0000	7.0000	7.0000	6.0000	7.0000	6.0000
75	319	2.0000	9.0000	0.0000	2.0000	6.0000	10.0000	3.0000	5.0000	6.0000	6.0000
76	320	8.0000	8.0000	8.0000	10.0000	5.0000	10.0000	8.0000	7.0000	6.0000	7.0000
77	321	5.0000	10.0000	5.0000	0.0000	-0.0000	7.0000	-0.0000	10.0000	-0.0000	5.0000
78	322	0.0000	10.0000	2.0000	0.0000	0.0000	10.0000	1.0000	2.0000	1.0000	0.0000
79	323	6.0000	8.0000	-0.0000	8.0000	6.0000	5.0000	7.0000	9.0000	5.0000	8.0000
80	324	3.0000	10.0000	9.0000	2.0000	2.0000	10.0000	6.0000	3.0000	2.0000	1.0000
81	325	0.0000	5.0000	0.0000	5.0000	2.0000	8.0000	10.0000	10.0000	2.0000	5.0000
82	326	2.0000	8.0000	2.0000	-0.0000	8.0000	5.0000	2.0000	10.0000	10.0000	5.0000
83	327	8.0000	8.0000	5.0000	8.0000	8.0000	9.0000	9.0000	4.0000	7.0000	6.0000
84	328	5.0000	10.0000	5.0000	5.0000	2.0000	5.0000	8.0000	3.0000	3.0000	4.0000

Appendix B1 (Contd)

	LABEL	-MF 31	-MF 32	G-- 33	G-- 34	G-- 35	G-- 36	G-- 37	G-- 38	G-- 39	G-- 40
1	101	5.0000	5.0000	4.0000	8.0000	8.0000	10.0000	3.0000	2.0000	10.0000	10.0000
2	102	-0.0000	3.0000	2.0000	2.0000	9.0000	3.0000	2.0000	2.0000	4.0000	2.0000
3	103	1.0000	2.0000	-0.0000	4.0000	4.0000	3.0000	2.0000	10.0000	4.0000	8.0000
4	104	2.0000	1.0000	2.0000	1.0000	3.0000	-0.0000	-0.0000	3.0000	3.0000	2.0000
5	105	5.0000	8.0000	1.0000	1.0000	3.0000	2.0000	1.0000	2.0000	1.0000	10.0000
6	106	9.0000	9.0000	8.0000	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000
7	107	4.0000	5.0000	3.0000	7.0000	5.0000	5.0000	2.0000	8.0000	8.0000	6.0000
8	108	3.0000	-0.0000	-0.0000	-0.0000	4.0000	2.0000	-0.0000	2.0000	3.0000	5.0000
9	109	-0.0000	-0.0000	-0.0000	3.0000	6.0000	2.0000	0.0000	8.0000	8.0000	7.0000
10	110	7.0000	7.0000	-0.0000	-0.0000	5.0000	2.0000	-0.0000	0.0000	-0.0000	-0.0000
11	111	5.0000	8.0000	-0.0000	6.0000	6.0000	2.0000	1.0000	9.0000	9.0000	9.0000
12	112	1.0000	1.0000	-0.0000	-0.0000	10.0000	10.0000	-0.0000	10.0000	10.0000	10.0000
13	113	1.0000	2.0000	1.0000	7.0000	7.0000	5.0000	0.0000	-0.0000	1.0000	2.0000
14	114	7.0000	5.0000	-0.0000	1.5000	4.0000	5.5000	3.0000	1.5000	4.0000	2.5000
15	115	3.0000	1.0000	2.0000	5.0000	9.0000	3.0000	4.0000	8.0000	9.0000	7.0000
16	116	-0.0000	-0.0000	-0.0000	-0.0000	10.0000	-0.0000	-0.0000	2.0000	3.0000	6.0000
17	117	1.0000	3.0000	2.0000	3.0000	10.0000	8.0000	-0.0000	8.0000	7.0000	7.0000
18	118	7.0000	8.0000	1.0000	-0.0000	3.0000	3.0000	2.0000	6.0000	6.0000	7.0000
19	119	5.0000	9.0000	-0.0000	10.0000	10.0000	-0.0000	4.0000	10.0000	10.0000	9.0000
20	120	3.0000	5.0000	-0.0000	2.0000	1.0000	1.0000	-0.0000	3.0000	10.0000	3.0000
21	121	7.0000	7.0000	-0.0000	3.0000	6.0000	3.0000	0.0000	4.0000	9.0000	8.0000
22	122	8.0000	8.0000	-0.0000	8.0000	10.0000	10.0000	8.0000	10.0000	10.0000	-0.0000
23	123	4.0000	4.0000	1.0000	0.0000	4.0000	2.0000	0.0000	5.0000	-0.0000	8.0000
24	124	-0.0000	-0.0000	-0.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
25	125	-0.0000	-0.0000	-0.0000	0.0000	3.0000	8.0000	0.0000	2.0000	9.0000	3.0000
26	126	9.0000	5.0000	0.0000	0.0000	8.0000	2.0000	1.0000	1.0000	1.0000	8.0000
27	127	7.0000	7.0000	8.0000	5.0000	6.0000	7.0000	4.0000	9.0000	9.0000	10.0000
28	128	5.0000	4.0000	5.0000	5.0000	10.0000	5.0000	2.0000	7.0000	4.0000	6.0000
29	201	6.0000	5.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	5.0000	-0.0000	0.0000
30	202	9.0000	9.0000	1.0000	-0.0000	4.0000	0.0000	1.0000	1.0000	1.0000	-0.0000
31	203	7.0000	7.0000	2.0000	3.0000	2.0000	7.0000	1.0000	1.0000	8.0000	4.0000
32	204	5.0000	3.0000	0.0000	1.0000	0.0000	0.0000	-0.0000	3.0000	-0.0000	6.0000
33	205	10.0000	10.0000	2.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	3.0000
34	206	7.0000	7.0000	2.0000	1.0000	1.0000	-0.0000	4.0000	3.0000	7.0000	2.0000
35	207	8.0000	9.0000	1.0000	5.0000	3.0000	1.0000	4.0000	3.0000	7.0000	6.0000
36	208	4.0000	1.0000	2.0000	3.0000	5.0000	4.0000	1.0000	4.0000	7.0000	7.0000
37	209	7.0000	9.0000	-0.0000	1.0000	0.0000	4.0000	2.0000	3.0000	5.0000	5.0000
38	210	10.0000	10.0000	-0.0000	-0.0000	2.0000	1.0000	-0.0000	1.0000	-0.0000	1.0000
39	211	2.0000	4.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	212	8.0000	9.0000	1.0000	1.0000	1.0000	5.0000	-0.0000	8.0000	7.0000	8.0000
41	213	5.0000	3.0000	-0.0000	10.0000	8.0000	9.0000	0.0000	0.0000	9.0000	9.0000
42	214	1.0000	9.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000	3.0000
43	215	6.0000	8.0000	-0.0000	-0.0000	3.0000	3.0000	-0.0000	5.0000	-0.0000	-0.0000
44	216	7.9000	8.0000	1.0000	7.0000	8.3000	7.8000	7.3000	7.0000	7.5000	8.0000
45	217	6.0000	7.0000	4.0000	2.0000	2.0000	2.0000	2.0000	4.0000	4.0000	2.0000
46	218	9.0000	10.0000	5.0000	7.0000	1.0000	1.0000	2.0000	2.0000	5.0000	5.0000
47	219	9.0000	9.0000	-0.0000	-0.0000	3.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
48	220	9.0000	5.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000
49	221	6.0000	6.0000	0.0000	2.0000	0.0000	-0.0000	-0.0000	-0.0000	2.0000	2.0000
50	222	10.0000	10.0000	1.0000	0.0000	1.0000	1.0000	1.0000	4.0000	5.0000	0.0000

Appendix B1(Contd)

	LABEL	-MF 31	-MF 32	G-- 33	G-- 34	G-- 35	G-- 36	G-- 37	G-- 38	G-- 39	G-- 40
51	223	-0.0000	-0.0000	-0.0000	0.0000	4.0000	0.0000	0.0000	C.0000	0.0000	0.0000
52	224	9.0000	10.0000	0.0000	0.0000	0.0000	0.0000	1.0000	C.0000	0.0000	1.0000
53	225	6.0000	6.3000	1.0000	-0.0000	1.0000	0.0000	0.0000	4.0000	1.0000	-0.0000
54	226	10.0000	9.0000	0.0000	2.0000	0.0000	0.0000	0.0000	C.0000	0.0000	2.0000
55	227	8.0000	9.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	-0.0000
56	228	9.0000	9.0000	3.0000	4.0000	4.0000	5.0000	-0.0000	6.0000	5.0000	10.0000
57	301	3.0000	4.0000	1.0000	4.0000	0.0000	0.0000	1.0000	C.0000	0.0000	0.0000
58	302	2.0000	-C.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
59	303	4.0000	2.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000
60	304	10.0000	7.0000	0.0000	-0.0000	2.0000	0.0000	-0.0000	4.0000	1.0000	5.0000
61	305	7.0000	7.0000	2.0000	2.0000	4.0000	2.0000	4.0000	1.0000	9.0000	5.0000
62	306	5.0000	7.0000	9.0000	5.0000	5.0000	5.0000	4.0000	6.0000	6.0000	6.0000
63	307	9.9000	9.2000	-0.0000	0.0000	0.0000	-0.0000	0.0000	-C.0000	0.0000	-0.0000
64	308	7.0000	7.0000	2.0000	0.0000	0.0000	1.0000	0.0000	6.0000	0.0000	0.0000
65	309	5.0000	7.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	C.0000	0.0000	0.0000
66	310	4.0000	4.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
67	311	4.0000	4.0000	9.0000	9.0000	8.0000	9.0000	9.0000	8.0000	8.0000	8.0000
68	312	8.0000	6.0000	0.0000	0.0000	0.0000	7.0000	0.0000	C.0000	1.0000	0.0000
69	313	9.0000	10.0000	5.0000	8.0000	10.0000	8.0000	5.0000	9.0000	9.0000	10.0000
70	314	7.0000	7.0000	5.0000	1.0000	1.0000	1.0000	-0.0000	3.0000	4.0000	1.0000
71	315	9.0000	7.0000	0.0000	0.0000	4.0000	-0.0000	0.0000	2.0000	7.0000	4.0000
72	316	4.0000	2.0000	2.0000	3.0000	2.0000	1.0000	0.0000	4.0000	6.0000	3.0000
73	317	7.0000	7.0000	4.0000	4.0000	2.0000	3.0000	4.0000	4.0000	4.0000	3.0000
74	318	6.0000	8.0000	4.0000	2.0000	4.0000	3.0000	3.0000	6.0000	2.0000	3.0000
75	319	9.0000	5.0000	0.0000	1.0000	0.0000	1.0000	0.0000	2.0000	3.0000	3.0000
76	320	10.0000	8.0000	3.0000	0.0000	3.0000	6.0000	7.0000	3.0000	7.0000	4.0000
77	321	1.0000	6.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-C.0000	-0.0000	-0.0000
78	322	2.0000	2.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	C.0000	0.0000	0.0000
79	323	2.0000	5.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	1.0000	2.0000	0.0000
80	324	6.0000	1.0000	-0.0000	0.0000	5.0000	0.0000	0.0000	0.0000	0.0000	1.0000
81	325	2.0000	2.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000
82	326	0.0000	5.0000	0.0000	0.0000	2.0000	2.0000	0.0000	8.0000	2.0000	2.0000
83	327	8.0000	6.0000	5.0000	5.0000	5.0000	4.0000	6.0000	9.0000	5.0000	4.0000
84	328	10.0000	5.0000	-0.0000	2.0000	10.0000	6.0000	4.0000	2.0000	3.0000	6.0000

	LABEL	G-- 41	G-- 42	G-- 43	G-- 44	G-- 45	G-- 46	G-- 47	-M- 48	-M- 49	-M- 50
1	101	9.0000	10.0000	10.0000	10.0000	9.0000	10.0000	5.0000	9.0000	7.0000	8.0000
2	102	3.0000	6.0000	-0.0000	9.0000	4.0000	9.0000	-0.0000	3.0000	7.0000	3.0000
3	103	5.0000	7.0000	10.0000	8.0000	3.0000	10.0000	4.0000	6.0000	4.0000	5.0000
4	104	3.0000	5.0000	5.0000	2.0000	4.0000	3.0000	3.0000	-0.0000	2.0000	1.0000
5	105	1.0000	1.0000	1.0000	1.0000	1.0000	8.0000	1.0000	1.0000	2.0000	7.0000
6	106	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	5.0000	10.0000
7	107	4.0000	8.0000	6.0000	8.0000	6.0000	7.0000	7.0000	7.0000	7.0000	7.0000
8	108	-0.0000	2.0000	-0.0000	4.0000	-0.0000	4.0000	1.0000	4.0000	5.0000	6.0000
9	109	-0.0000	1.0000	5.0000	-0.0000	-0.0000	-0.0000	9.0000	6.0000	-0.0000	5.0000
10	110	2.0000	4.0000	2.0000	-0.0000	1.0000	2.0000	0.0000	6.0000	6.0000	8.0000
11	111	2.0000	9.0000	9.0000	9.0000	9.0000	9.0000	8.0000	5.0000	3.0000	5.0000
12	112	10.0000	10.0000	10.0000	10.0000	1.0000	10.0000	10.0000	5.0000	-0.0000	6.0000
13	113	1.0000	6.0000	5.0000	7.0000	4.0000	1.0000	5.0000	-0.0000	-0.0000	1.0000
14	114	9.5000	2.0000	2.0000	3.0000	8.0000	4.5000	2.5000	5.0000	2.5000	6.5000
15	115	3.0000	4.0000	2.0000	7.0000	3.0000	3.0000	2.0000	4.0000	3.0000	9.0000
16	116	1.0000	-0.0000	5.0000	4.0000	1.0000	6.0000	-0.0000	5.0000	-0.0000	4.0000
17	117	7.0000	9.0000	7.0000	9.0000	5.0000	7.0000	6.0000	4.0000	4.0000	6.0000
18	118	-0.0000	7.0000	5.0000	6.0000	6.0000	8.0000	3.0000	8.0000	7.0000	9.0000
19	119	4.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	7.0000	8.0000
20	120	-0.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	3.0000	-0.0000	5.0000
21	121	0.0000	4.0000	7.0000	6.0000	3.0000	6.0000	4.0000	4.0000	7.0000	8.0000
22	122	8.0000	10.0000	10.0000	10.0000	1.0000	10.0000	10.0000	8.0000	2.0000	8.0000
23	123	0.0000	5.0000	-0.0000	-0.0000	-0.0000	1.0000	-0.0000	4.0000	3.0000	3.0000
24	124	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	10.0000
25	125	0.0000	8.0000	8.0000	1.0000	0.0000	3.0000	0.0000	0.0000	-0.0000	-0.0000
26	126	3.0000	0.0000	1.0000	10.0000	2.0000	3.0000	1.0000	-0.0000	1.0000	9.0000
27	127	7.0000	8.0000	9.0000	5.0000	7.0000	10.0000	6.0000	7.0000	6.0000	7.0000
28	128	1.0000	4.0000	8.0000	2.0000	6.0000	4.0000	7.0000	7.0000	2.0000	5.0000
29	201	1.0000	2.0000	-0.0000	1.0000	4.0000	1.0000	-0.0000	4.0000	7.0000	6.0000
30	202	-0.0000	3.0000	2.0000	1.0000	-0.0000	1.0000	0.0000	8.0000	9.0000	9.0000
31	203	2.0000	4.0000	2.0000	7.0000	3.0000	5.0000	2.0000	3.0000	5.0000	5.0000
32	204	-0.0000	0.0000	2.0000	0.0000	-0.0000	1.0000	-0.0000	9.0000	3.0000	8.0000
33	205	1.0000	2.0000	4.0000	0.0000	1.0000	6.0000	0.0000	9.0000	10.0000	9.0000
34	206	1.5000	6.0000	6.0000	5.0000	5.0000	4.0000	1.0000	6.0000	7.0000	7.0000
35	207	1.0000	5.0000	4.0000	5.0000	2.0000	3.0000	1.0000	7.0000	8.0000	9.0000
36	208	2.0000	5.0000	2.0000	5.0000	3.0000	2.0000	2.0000	6.0000	6.0000	6.0000
37	209	2.0000	6.0000	5.0000	4.0000	0.0000	4.0000	1.0000	6.0000	9.0000	9.0000
38	210	-0.0000	-0.0000	-0.0000	2.0000	-0.0000	2.0000	-0.0000	4.0000	10.0000	10.0000
39	211	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000
40	212	-0.0000	6.0000	6.0000	6.0000	5.0000	3.0000	1.0000	5.0000	8.0000	9.0000
41	213	-0.0000	4.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	10.0000	6.0000	6.0000
42	214	0.0000	-0.0000	-0.0000	-0.0000	3.0000	1.0000	-0.0000	5.0000	-0.0000	7.0000
43	215	6.0000	5.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	8.0000	-0.0000	8.0000
44	216	6.3000	6.2000	6.0000	7.0000	7.0000	2.9000	3.0000	9.0000	8.0000	9.1000
45	217	2.0000	3.0000	2.0000	5.0000	4.0000	2.0000	4.0000	6.0000	8.0000	8.0000
46	218	0.0000	7.0000	5.0000	8.0000	7.0000	2.0000	2.0000	9.0000	10.0000	10.0000
47	219	0.0000	0.0000	-0.0000	0.0000	4.0000	1.0000	-0.0000	8.0000	7.0000	9.0000
48	220	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	7.0000	6.0000	7.0000
49	221	-0.0000	2.0000	0.0000	0.0000	0.0000	6.0000	0.0000	-0.0000	-0.0000	5.0000
50	222	0.0000	0.0000	2.0000	2.0000	0.0000	4.0000	0.0000	10.0000	10.0000	10.0000

	LABEL	G-- 41	G-- 42	G-- 43	G-- 44	G-- 45	G-- 46	G-- 47	-M- 48	-M- 49	-M- 50
51	223	0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
52	224	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	9.0000	-0.0000	9.0000
53	225	1.0000	4.0000	1.0000	0.0000	1.0000	1.0000	1.0000	5.0000	7.0000	6.0000
54	226	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10.0000	9.0000	10.0000
55	227	0.0000	0.0000	3.0000	0.0000	3.0000	-0.0000	0.0000	4.0000	9.0000	7.0000
56	228	3.0000	5.0000	6.0000	4.0000	4.0000	7.0000	4.0000	8.0000	8.0000	9.0000
57	301	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000	1.0000
58	302	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	1.0000
59	303	0.0000	0.0000	0.0000	0.0000	0.0000	3.0000	1.0000	3.0000	-0.0000	4.0000
60	304	0.0000	0.0000	0.0000	0.0000	-0.0000	5.0000	4.0000	5.0000	4.0000	4.0000
61	305	2.0000	3.0000	2.0000	2.0000	2.0000	2.0000	3.0000	1.0000	6.0000	2.0000
62	306	4.0000	6.0000	8.0000	6.0000	5.0000	4.0000	2.0000	6.0000	7.0000	9.0000
63	307	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	8.0000	6.0000	9.0000
64	308	2.0000	4.0000	0.0000	0.0000	6.0000	2.0000	0.0000	7.5000	5.0000	5.0000
65	309	-0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	4.0000
66	310	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.0000	-0.0000	5.0000
67	311	9.0000	9.0000	7.0000	8.0000	8.0000	7.0000	6.0000	5.0000	7.0000	4.0000
68	312	0.0000	0.0000	0.0000	0.0000	0.0000	7.0000	0.0000	5.0000	1.0000	5.0000
69	313	9.0000	8.0000	10.0000	10.0000	10.0000	10.0000	9.0000	8.0000	7.0000	9.0000
70	314	1.0000	2.0000	7.0000	1.0000	7.0000	2.0000	4.0000	0.0000	0.0000	8.0000
71	315	0.0000	0.0000	0.0000	4.0000	0.0000	3.0000	0.0000	2.0000	5.0000	7.0000
72	316	1.0000	3.0000	2.0000	2.0000	-0.0000	3.0000	-0.0000	1.0000	4.0000	7.0000
73	317	3.0000	4.0000	4.0000	4.0000	4.0000	3.0000	4.0000	6.0000	5.0000	5.0000
74	318	2.0000	3.0000	3.0000	4.0000	2.0000	2.0000	2.0000	6.0000	3.0000	6.0000
75	319	0.0000	2.0000	1.0000	0.0000	0.0000	8.0000	0.0000	7.0000	5.0000	7.0000
76	320	4.0000	2.0000	5.0000	4.0000	2.0000	0.0000	0.0000	6.0000	7.0000	7.0000
77	321	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	10.0000	6.0000	7.0000
78	322	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	2.0000
79	323	-0.0000	1.0000	0.0000	-0.0000	1.0000	1.0000	0.0000	7.0000	5.0000	10.0000
80	324	0.0000	1.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	1.0000	0.0000	6.0000
81	325	-0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	2.0000	5.0000
82	326	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	5.0000	2.0000	5.0000
83	327	3.0000	5.0000	6.0000	4.0000	7.0000	9.0000	5.0000	7.0000	7.0000	6.0000
84	328	3.0000	3.0000	7.5000	6.0000	0.0000	8.0000	7.5000	2.0000	3.0000	7.0000

Appendix B1 (Contd)

	LABEL	-M- 51	-M- 52	-M- 53	-M- 54	-M- 55	-M- 56	-M- 57	-M- 58	-M- 59	-M- 60
51	223	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
52	224	8.0000	9.0000	1.0000	4.0000	1.0000	4.0000	2.0000	4.0000	6.0000	4.0000
53	225	8.0000	7.0000	4.0000	5.0000	-0.0000	2.0000	8.0000	7.0000	5.0000	1.0000
54	226	10.0000	8.0000	10.0000	10.0000	3.0000	9.0000	10.0000	0.0000	10.0000	2.0000
55	227	7.0000	9.0000	2.0000	5.0000	9.0000	9.0000	9.0000	3.0000	9.0000	8.0000
56	228	9.0000	9.0000	-0.0000	5.0000	-0.0000	7.0000	7.0000	4.0000	9.0000	7.0000
57	301	1.0000	4.0000	-0.0000	-0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	-0.0000
58	302	0.0000	1.0000	1.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
59	303	2.0000	0.0000	1.0000	-0.0000	-0.0000	1.0000	1.0000	-0.0000	-0.0000	-0.0000
60	304	3.0000	8.0000	4.0000	4.0000	0.0000	4.0000	-0.0000	0.0000	-0.0000	0.0000
61	305	-0.0000	8.0000	7.0000	9.0000	1.0000	7.0000	5.0000	2.0000	8.0000	5.0000
62	306	9.0000	8.0000	4.0000	6.0000	6.0000	6.0000	5.0000	3.0000	8.0000	7.0000
63	307	9.0000	9.3000	-0.0000	7.0000	0.0000	7.0000	5.0000	5.0000	8.0000	-0.0000
64	308	5.0000	7.0000	3.0000	3.0000	5.0000	7.0000	3.0000	0.0000	7.0000	3.0000
65	309	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000
66	310	5.0000	6.0000	-0.0000	-0.0000	4.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
67	311	8.0000	7.0000	10.0000	8.0000	8.0000	7.0000	9.0000	8.0000	6.0000	9.0000
68	312	4.0000	4.0000	1.0000	7.0000	-0.0000	7.0000	5.0000	1.0000	2.0000	-0.0000
69	313	9.0000	9.0000	6.0000	7.0000	7.0000	8.0000	6.0000	5.0000	9.0000	6.0000
70	314	2.0000	8.0000	0.0000	3.0000	-0.0000	7.0000	0.0000	0.0000	0.0000	0.0000
71	315	6.0000	7.0000	0.0000	1.0000	0.0000	0.0000	0.0000	-0.0000	5.0000	-0.0000
72	316	4.0000	1.0000	4.0000	2.0000	0.0000	7.0000	2.0000	2.0000	1.0000	2.0000
73	317	5.0000	6.0000	4.0000	6.0000	5.0000	5.0000	4.0000	4.0000	5.0000	2.0000
74	318	6.0000	7.0000	4.0000	5.0000	2.0000	4.0000	4.0000	4.0000	4.0000	3.0000
75	319	6.0000	6.0000	0.0000	2.0000	0.0000	4.0000	0.0000	0.0000	0.0000	0.0000
76	320	7.0000	9.0000	8.0000	2.0000	6.0000	5.0000	9.0000	3.0000	7.0000	0.0000
77	321	10.0000	10.0000	0.0000	8.0000	0.0000	10.0000	10.0000	-0.0000	10.0000	5.0000
78	322	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
79	323	8.0000	6.0000	3.0000	6.0000	2.0000	4.0000	8.0000	2.0000	5.0000	2.0000
80	324	6.0000	4.0000	0.0000	0.0000	1.0000	2.0000	1.0000	-0.0000	1.0000	-0.0000
81	325	0.0000	2.0000	0.0000	2.0000	0.0000	0.0000	5.0000	0.0000	0.0000	0.0000
82	326	5.0000	5.0000	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	0.0000	2.0000
83	327	6.0000	8.0000	6.0000	6.0000	5.0000	7.0000	3.0000	5.0000	5.0000	5.0000
84	328	7.0000	5.0000	5.0000	5.0000	3.0000	3.0000	7.0000	-0.0000	3.0000	3.0000

	LABEL	-M- 61	-M- 62	--- 63	--- 64	--- 65	--- 66	--- 67	--- 68	--- 69	--- 70
1	101	5.0000	8.0000	-0.0000	2.0000	2.0000	1.0000	2.0000	-0.0000	2.0000	2.0000
2	102	2.0000	-0.0000	2.0000	-0.0000	-0.0000	-0.0000	-0.0000	1.0000	3.0000	2.0000
3	103	2.0000	4.0000	3.0000	3.0000	3.0000	-0.0000	3.0000	5.0000	2.0000	4.0000
4	104	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
5	105	2.0000	2.0000	1.0000	1.0000	2.0000	4.0000	1.0000	2.0000	2.0000	2.0000
6	106	7.0000	5.0000	1.0000	1.0000	1.0000	1.0000	5.0000	1.0000	5.0000	5.0000
7	107	1.0000	2.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000	2.0000	1.0000	2.0000
8	108	-0.0000	2.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
9	109	-0.0000	-0.0000	1.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000
10	110	-0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
11	111	-0.0000	3.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
12	112	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000
13	113	-0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000
14	114	-0.0000	2.0000	-0.0000	0.5000	0.5000	-0.0000	-0.0000	-0.0000	3.0000	2.0000
15	115	5.0000	6.0000	2.0000	3.0000	-0.0000	4.0000	-0.0000	5.0000	-0.0000	3.0000
16	116	3.0000	5.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000
17	117	3.0000	3.0000	-0.0000	2.0000	1.0000	-0.0000	1.0000	3.0000	2.0000	2.0000
18	118	1.0000	5.0000	-0.0000	-0.0000	-0.0000	2.0000	1.0000	-0.0000	1.0000	1.0000
19	119	-0.0000	5.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
20	120	1.0000	1.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
21	121	2.0000	-0.0000	-0.0000	4.0000	-0.0000	1.0000	0.0000	-0.0000	0.0000	0.0000
22	122	-0.0000	0.0000	-0.0000	-0.0000	5.0000	-0.0000	2.0000	-0.0000	2.0000	-0.0000
23	123	3.0000	3.0000	2.0000	-0.0000	1.0000	-0.0000	2.0000	-0.0000	-0.0000	-0.0000
24	124	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
25	125	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
26	126	9.0000	5.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000
27	127	4.0000	7.0000	2.0000	3.0000	4.0000	-0.0000	4.0000	1.0000	3.0000	3.0000
28	128	4.0000	4.0000	1.0000	2.0000	1.0000	2.0000	2.0000	4.0000	-0.0000	-0.0000
29	201	2.0000	1.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000	-0.0000	-0.0000
30	202	8.0000	7.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000
31	203	1.0000	6.0000	1.0000	3.0000	2.0000	-0.0000	2.0000	2.0000	-0.0000	2.0000
32	204	-0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000
33	205	5.0000	4.0000	0.0000	-0.0000	2.0000	-0.0000	-0.0000	-0.0000	1.0000	1.0000
34	206	7.0000	8.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000	2.0000
35	207	7.0000	8.0000	1.0000	-0.0000	-0.0000	1.0000	2.0000	-0.0000	4.0000	1.0000
36	208	6.0000	8.0000	1.0000	1.5000	4.0000	1.0000	1.0000	2.0000	4.0000	3.0000
37	209	6.0000	6.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
38	210	9.0000	0.5000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	6.0000	-0.0000
39	211	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	212	1.0000	6.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	5.0000	1.0000
41	213	-0.0000	10.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	3.0000	3.0000	4.0000
42	214	-0.0000	2.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
43	215	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000
44	216	2.5000	2.0000	1.0000	0.0000	1.0000	-0.0000	-0.0000	0.0000	3.5000	0.0000
45	217	6.0000	8.0000	1.0000	3.0000	2.0000	2.0000	4.0000	5.0000	-0.0000	2.0000
46	218	5.0000	3.0000	-0.0000	0.0000	3.0000	3.0000	-0.0000	3.0000	1.0000	2.0000
47	219	4.0000	2.0000	2.0000	-0.0000	0.0000	1.0000	1.0000	-0.0000	-0.0000	-0.0000
48	220	-0.0000	2.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000
49	221	2.0000	2.0000	-0.0000	2.0000	-0.0000	1.0000	0.0000	2.0000	0.0000	-0.0000
50	222	5.0000	9.0000	-0.0000	1.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000

Appendix B1 (Contd)

	LABEL	-M- 61	-M- 62	--- 63	--- 64	--- 65	--- 66	--- 67	--- 68	--- 69	--- 70
51	223	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000
52	224	4.0000	5.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000
53	225	6.0000	2.0000	-0.0000	1.0000	-0.0000	1.0000	0.0000	1.0000	-0.0000	-0.0000
54	226	10.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	7.0000	0.0000
55	227	7.0000	3.0000	1.0000	-0.0000	1.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
56	228	6.0000	7.0000	-0.0000	0.0000	3.0000	1.0000	-0.0000	0.0000	2.0000	5.0000
57	301	-0.0000	3.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
58	302	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
59	303	0.0000	1.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
60	304	-0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
61	305	3.0000	7.0000	-0.0000	2.0000	2.0000	2.0000	-0.0000	3.0000	5.0000	2.0000
62	306	7.0000	6.0000	1.0000	2.0000	5.0000	2.0000	1.0000	6.0000	2.0000	2.0000
63	307	8.0000	2.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
64	308	5.0000	6.0000	0.0000	0.0000	0.0000	0.0000	4.0000	0.0000	0.0000	1.0000
65	309	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000
66	310	-0.0000	9.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000
67	311	7.0000	9.0000	9.0000	10.0000	9.0000	10.0000	10.0000	10.0000	9.0000	10.0000
68	312	1.0000	1.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000
69	313	6.0000	5.0000	10.0000	6.0000	5.0000	5.0000	6.0000	5.0000	5.0000	8.0000
70	314	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000
71	315	0.0000	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	3.0000	-0.0000
72	316	2.0000	2.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	-0.0000	1.0000
73	317	4.0000	3.0000	3.0000	4.0000	3.0000	3.0000	2.0000	4.0000	2.0000	3.0000
74	318	3.0000	3.0000	2.0000	1.0000	2.0000	2.0000	1.0000	4.0000	2.0000	2.0000
75	319	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.0000
76	320	0.0000	3.0000	3.0000	0.0000	3.0000	2.0000	0.0000	0.0000	-0.0000	1.0000
77	321	10.0000	10.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000
78	322	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
79	323	10.0000	10.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000	1.0000	-0.0000	1.0000
80	324	0.0000	1.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	-0.0000
81	325	1.0000	2.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
82	326	2.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	2.0000	0.0000
83	327	6.0000	5.0000	1.0000	3.0000	0.0000	2.0000	4.0000	3.0000	3.0000	3.0000
84	328	3.0000	3.0000	3.0000	5.0000	5.0000	-0.0000	-0.0000	7.0000	-0.0000	-0.0000

	LABEL	--- 71	--- 72	--- 73	--- 74	--- 75	--- 76	--- 77	GM- 78	GM- 79	GM- 80
1	101	4.0000	4.0000	3.0000	2.0000	-0.0000	5.0000	5.0000	7.0000	10.0000	10.0000
2	102	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000	-0.0000	10.0000	8.0000	4.0000
3	103	4.0000	4.0000	3.0000	3.0000	1.0000	-0.0000	3.0000	-0.0000	6.0000	8.0000
4	104	1.0000	-0.0000	2.0000	2.0000	0.0000	-0.0000	-0.0000	5.0000	7.0000	1.0000
5	105	1.0000	1.0000	1.0000	1.0000	2.0000	2.0000	2.0000	10.0000	8.0000	5.0000
6	106	5.0000	7.0000	5.0000	5.0000	1.0000	1.0000	7.0000	7.0000	10.0000	10.0000
7	107	1.0000	1.0000	2.0000	2.0000	1.0000	1.0000	1.0000	6.0000	8.0000	8.0000
8	108	-0.0000	1.0000	-0.0000	2.0000	-0.0000	-0.0000	2.0000	9.0000	10.0000	5.0000
9	109	3.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	8.0000	10.0000	7.0000
10	110	0.0000	-0.0000	1.0000	-0.0000	-0.0000	-0.0000	0.0000	9.0000	10.0000	10.0000
11	111	-0.0000	-0.0000	-0.0000	5.0000	-0.0000	0.0000	2.0000	9.0000	10.0000	6.0000
12	112	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	2.0000	10.0000	10.0000
13	113	1.0000	0.0000	3.0000	0.0000	0.0000	-0.0000	-0.0000	9.0000	10.0000	3.0000
14	114	1.0000	1.0000	0.5000	5.0000	5.0000	-0.0000	-0.0000	10.0000	8.0000	2.0000
15	115	6.0000	2.0000	1.0000	1.0000	3.0000	3.0000	3.0000	7.0000	9.0000	6.0000
16	116	0.0000	-0.0000	3.0000	1.0000	6.0000	-0.0000	5.0000	5.0000	10.0000	10.0000
17	117	3.0000	4.0000	3.0000	4.0000	1.0000	2.0000	4.0000	9.0000	5.0000	8.0000
18	118	1.0000	5.0000	2.0000	6.0000	2.0000	-0.0000	-0.0000	8.0000	7.0000	7.0000
19	119	-0.0000	2.0000	6.0000	-0.0000	-0.0000	-0.0000	-0.0000	4.0000	10.0000	5.0000
20	120	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	10.0000	1.0000	3.0000
21	121	0.0000	-0.0000	-0.0000	-0.0000	2.0000	-0.0000	0.0000	9.0000	9.0000	9.0000
22	122	7.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	4.0000	9.0000	9.0000	6.0000
23	123	0.0000	-0.0000	-0.0000	-0.0000	3.0000	3.0000	0.0000	9.0000	4.0000	8.0000
24	124	-0.0000	-0.0000	-0.0000	5.0000	-0.0000	-0.0000	-0.0000	10.0000	10.0000	-0.0000
25	125	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	10.0000	-0.0000
26	126	0.0000	0.0000	0.0000	0.0000	3.0000	-0.0000	-0.0000	8.0000	9.0000	8.0000
27	127	3.0000	3.0000	7.0000	5.0000	1.0000	-0.0000	6.0000	10.0000	7.0000	10.0000
28	128	2.0000	4.0000	4.0000	2.0000	3.0000	3.0000	1.0000	4.0000	7.0000	6.0000
29	201	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	3.0000	8.0000	5.0000
30	202	-0.0000	1.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	7.0000	6.0000	2.0000
31	203	2.0000	2.0000	1.0000	1.0000	-0.0000	1.0000	0.0000	5.0000	8.0000	3.0000
32	204	-0.0000	0.0000	-0.0000	0.0000	-0.0000	0.0000	0.0000	4.0000	5.0000	5.0000
33	205	0.0000	-0.0000	-0.0000	-0.0000	0.0000	6.0000	0.0000	6.0000	3.0000	1.0000
34	206	1.0000	6.0000	3.0000	6.0000	0.0000	3.0000	-0.0000	9.0000	9.0000	5.0000
35	207	1.0000	3.0000	1.0000	-0.0000	2.0000	3.0000	1.0000	9.0000	8.0000	9.0000
36	208	4.0000	6.0000	1.0000	3.0000	6.0000	2.0000	6.0000	8.5000	9.0000	8.0000
37	209	-0.0000	5.0000	4.0000	1.0000	-0.0000	-0.0000	4.0000	10.0000	10.0000	10.0000
38	210	-0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	9.0000	5.0000	2.0000
39	211	0.0000	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	1.0000
40	212	3.0000	3.0000	2.0000	1.0000	0.0000	-0.0000	5.0000	8.0000	6.0000	7.0000
41	213	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	9.0000	-0.0000	-0.0000
42	214	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	6.0000	8.0000	1.0000
43	215	-0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	10.0000	7.0000	7.0000
44	216	1.8000	1.0000	1.0000	2.0000	3.1000	1.0000	1.0000	7.0000	10.0000	10.0000
45	217	3.0000	6.0000	2.0000	3.0000	3.0000	4.0000	3.0000	8.0000	10.0000	7.0000
46	218	-0.0000	-0.0000	2.0000	1.0000	1.0000	3.0000	8.0000	7.0000	9.0000	2.0000
47	219	-0.0000	0.0000	0.0000	-0.0000	4.0000	1.0000	0.0000	9.0000	10.0000	2.0000
48	220	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	0.0000	9.0000	0.0000	-0.0000
49	221	-0.0000	-0.0000	0.0000	-0.0000	2.0000	6.0000	-0.0000	8.0000	5.0000	2.0000
50	222	0.0000	1.0000	0.0000	0.0000	0.0000	4.0000	1.0000	10.0000	4.0000	10.0000

Appendix B1 (Contd)

	LABEL	--- 71	--- 72	--- 73	--- 74	--- 75	--- 76	--- 77	GM- 78	GM- 79	GM- 80
51	223	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	-0.0000	5.0000	8.0000	5.0000
52	224	0.0000	-0.0000	-0.0000	0.0000	0.0000	-0.0000	0.0000	9.0000	3.0000	3.0000
53	225	3.0000	-0.0000	1.0000	1.0000	-0.0000	1.0000	-0.0000	7.6000	5.0000	1.0000
54	226	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	10.0000	0.0000	8.0000
55	227	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	5.0000	-0.0000
56	228	2.0000	-0.0000	-0.0000	2.0000	2.0000	-0.0000	-0.0000	10.0000	6.0000	5.0000
57	301	-0.0000	6.0000	1.0000	0.0000	0.0000	-0.0000	-0.0000	4.0000	2.0000	-0.0000
58	302	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	1.0000	8.0000	2.0000
59	303	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	2.0000	6.0000	4.0000	4.0000
60	304	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	2.0000	9.0000	9.0000	8.0000
61	305	1.0000	1.0000	1.0000	0.0000	2.0000	7.0000	4.0000	2.0000	7.0000	4.0000
62	306	6.0000	6.0000	8.0000	3.0000	2.0000	4.0000	4.0000	8.0000	7.0000	5.0000
63	307	0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	0.0000	5.0000	0.0000
64	308	3.0000	4.0000	-0.0000	0.0000	1.0000	0.0000	0.0000	2.0000	5.0000	3.0000
65	309	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	3.0000	4.0000
66	310	0.0000	4.0000	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	7.0000	7.0000	7.0000
67	311	9.0000	8.0000	8.0000	9.0000	10.0000	9.0000	6.0000	3.0000	2.0000	6.0000
68	312	0.0000	1.0000	0.0000	0.0000	1.0000	-0.0000	0.0000	10.0000	9.0000	8.0000
69	313	5.0000	7.0000	5.0000	5.0000	5.0000	5.0000	5.0000	9.0000	10.0000	10.0000
70	314	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	7.0000	2.0000	1.0000
71	315	-0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	8.0000	9.0000	5.0000
72	316	2.0000	0.0000	0.0000	0.0000	5.0000	5.0000	0.0000	3.0000	8.0000	7.0000
73	317	4.0000	4.0000	3.0000	4.0000	2.0000	2.0000	3.0000	7.0000	4.0000	4.0000
74	318	2.0000	4.0000	3.0000	1.0000	3.0000	3.0000	3.0000	7.0000	7.0000	5.0000
75	319	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9.0000	5.0000	-0.0000
76	320	7.0000	4.0000	4.0000	6.0000	2.0000	0.0000	0.0000	7.0000	9.0000	4.0000
77	321	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	0.0000	7.0000	0.0000
78	322	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	8.0000	0.0000
79	323	1.0000	4.0000	-0.0000	-0.0000	-0.0000	-0.0000	4.0000	8.0000	0.0000	1.0000
80	324	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	-0.0000	1.0000	9.0000	3.0000
81	325	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	0.0000	3.0000	0.0000
82	326	0.0000	0.0000	0.0000	0.0000	2.0000	0.0000	0.0000	5.0000	8.0000	8.0000
83	327	5.0000	4.0000	3.0000	4.0000	2.0000	4.0000	1.0000	6.0000	9.0000	3.0000
84	328	-0.0000	2.0000	-0.0000	-0.0000	-0.0000	0.0000	3.0000	0.0000	8.0000	8.0000

	LABEL	GM- 81	GM- 82	GM- 83	GM- 84	GM- 85	GM- 86	GM- 87	G-F 88	G-F 89	G-F 90
1	101	9.0000	9.0000	10.0000	8.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000
2	102	10.0000	9.0000	10.0000	9.0000	9.0000	10.0000	7.0000	7.0000	10.0000	-0.0000
3	103	10.0000	10.0000	10.0000	7.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
4	104	8.0000	7.0000	8.0000	7.0000	8.0000	4.0000	6.0000	2.0000	6.0000	-0.0000
5	105	8.0000	7.0000	10.0000	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
6	106	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	4.0000	10.0000	10.0000
7	107	10.0000	10.0000	10.0000	9.0000	10.0000	9.0000	10.0000	10.0000	4.0000	9.0000
8	108	3.0000	8.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	10.0000	2.0000
9	109	10.0000	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000	8.0000	10.0000	1.0000
10	110	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	10.0000
11	111	8.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	9.0000	6.0000
12	112	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	-0.0000	10.0000	10.0000
13	113	10.0000	10.0000	8.0000	7.0000	9.0000	9.0000	8.0000	6.0000	7.0000	0.0000
14	114	10.0000	5.0000	10.0000	7.5000	10.0000	5.0000	10.0000	8.5000	7.5000	4.0000
15	115	4.0000	9.0000	10.0000	1.0000	10.0000	10.0000	7.0000	8.0000	10.0000	8.0000
16	116	8.0000	10.0000	10.0000	1.0000	8.0000	10.0000	5.0000	7.0000	4.0000	-0.0000
17	117	8.0000	9.0000	8.0000	5.0000	9.0000	10.0000	10.0000	7.0000	10.0000	9.0000
18	118	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.0000	9.0000	8.0000	3.0000
19	119	10.0000	10.0000	10.0000	9.0000	10.0000	2.0000	10.0000	-0.0000	9.0000	10.0000
20	120	10.0000	10.0000	10.0000	10.0000	10.0000	4.0000	10.0000	2.0000	9.0000	-0.0000
21	121	9.0000	10.0000	10.0000	9.0000	10.0000	4.0000	6.0000	10.0000	7.0000	2.0000
22	122	9.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	8.0000	10.0000	10.0000
23	123	8.0000	8.0000	10.0000	2.0000	9.0000	4.0000	10.0000	8.0000	10.0000	-0.0000
24	124	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	5.0000	10.0000	10.0000
25	125	2.0000	2.0000	10.0000	-0.0000	10.0000	10.0000	2.0000	5.0000	2.0000	6.0000
26	126	10.0000	9.0000	10.0000	1.0000	10.0000	10.0000	10.0000	9.0000	10.0000	3.0000
27	127	8.0000	8.0000	10.0000	6.0000	8.0000	10.0000	10.0000	8.0000	6.0000	-0.0000
28	128	10.0000	10.0000	5.0000	9.0000	8.0000	2.0000	2.0000	2.0000	3.0000	1.0000
29	201	9.0000	6.0000	10.0000	7.0000	10.0000	2.0000	10.0000	5.0000	7.0000	0.0000
30	202	10.0000	9.0000	6.0000	6.0000	2.0000	6.0000	6.0000	8.0000	-0.0000	0.0000
31	203	10.0000	6.0000	10.0000	8.0000	10.0000	8.0000	8.0000	10.0000	8.0000	0.0000
32	204	4.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	4.0000	7.0000	5.0000
33	205	6.0000	2.0000	10.0000	3.0000	3.0000	5.0000	10.0000	7.0000	8.0000	3.0000
34	206	6.0000	8.0000	10.0000	8.0000	10.0000	5.0000	7.0000	2.5000	5.0000	4.0000
35	207	9.0000	8.0000	7.0000	5.0000	9.0000	9.0000	8.0000	10.0000	7.0000	5.0000
36	208	9.0000	8.5000	9.5000	9.5000	9.5000	8.0000	10.0000	9.0000	2.0000	2.0000
37	209	7.0000	9.0000	5.0000	8.0000	5.0000	5.0000	9.0000	10.0000	9.0000	5.0000
38	210	9.0000	0.0000	1.0000	0.0000	1.0000	5.0000	8.0000	10.0000	4.8000	5.0000
39	211	1.0000	1.0000	6.0000	0.0000	4.0000	0.0000	-0.0000	1.0000	1.0000	0.0000
40	212	10.0000	9.0000	10.0000	8.0000	9.0000	8.0000	9.0000	7.0000	9.0000	0.0000
41	213	6.0000	8.0000	-0.0000	-0.0000	3.0000	-0.0000	-0.0000	10.0000	10.0000	-0.0000
42	214	8.0000	8.0000	10.0000	8.0000	4.0000	0.0000	10.0000	10.0000	6.0000	0.0000
43	215	10.0000	10.0000	10.0000	-0.0000	9.0000	7.0000	10.0000	10.0000	0.0000	5.0000
44	216	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	9.8000	5.0000	7.0000
45	217	6.0000	7.0000	4.0000	6.0000	6.0000	4.0000	8.0000	8.0000	10.0000	3.0000
46	218	5.0000	7.0000	10.0000	0.0000	5.0000	0.0000	10.0000	10.0000	9.0000	2.0000
47	219	8.0000	-0.0000	10.0000	2.0000	2.0000	7.0000	1.0000	10.0000	10.0000	0.0000
48	220	0.0000	0.0000	5.0000	5.0000	5.0000	5.0000	5.0000	8.0000	8.0000	0.0000
49	221	10.0000	3.0000	7.0000	-0.0000	10.0000	9.0000	10.0000	6.0000	-0.0000	10.0000
50	222	8.0000	2.0000	6.0000	0.0000	4.0000	6.0000	8.0000	9.0000	8.0000	3.0000

Appendix B1 (Contd)

	LABEL	GM- 81	GM- 82	GM- 83	GM- 84	GM- 85	GM- 86	GM- 87	G-F 88	G-F 89	G-F 90
51	223	8.0000	0.0000	8.0000	4.0000	9.0000	9.0000	3.0000	9.0000	0.0000	4.0000
52	224	7.0000	10.0000	10.0000	-0.0000	9.0000	1.0000	10.0000	8.0000	10.0000	0.0000
53	225	4.0000	3.0000	9.0000	1.0000	1.0000	1.0000	0.0000	10.0000	1.0000	-0.0000
54	226	1.0000	10.0000	3.0000	0.0000	9.0000	0.0000	10.0000	1.0000	10.0000	0.0000
55	227	2.0000	1.0000	3.0000	3.0000	9.0000	5.0000	3.0000	5.0000	8.0000	5.0000
56	228	10.0000	8.0000	10.0000	9.0000	10.0000	10.0000	10.0000	8.0000	10.0000	9.0000
57	301	1.0000	2.0000	2.0000	2.0000	3.0000	2.0000	3.0000	4.0000	6.9000	-0.0000
58	302	7.0000	5.0000	9.0000	7.0000	9.0000	1.0000	3.0000	9.0000	3.0000	4.0000
59	303	8.0000	6.0000	9.0000	6.0000	6.0000	2.0000	8.0000	10.0000	7.0000	0.0000
60	304	10.0000	9.0000	10.0000	10.0000	10.0000	5.0000	9.9000	10.0000	10.0000	-0.0000
61	305	4.0000	3.0000	4.0000	2.0000	4.0000	2.0000	9.0000	9.0000	9.0000	4.0000
62	306	7.0000	7.0000	8.0000	7.0000	9.0000	6.0000	9.0000	10.0000	8.0000	0.0000
63	307	6.0000	0.0000	0.0000	0.0000	7.0000	6.0000	5.0000	10.0000	6.0000	9.9000
64	308	6.0000	4.0000	8.0000	-0.0000	6.0000	0.0000	6.0000	10.0000	8.0000	0.0000
65	309	2.0000	0.0000	6.0000	0.0000	0.0000	0.0000	-0.0000	10.0000	0.0000	0.0000
66	310	7.0000	0.0000	6.0000	0.0000	6.0000	0.0000	7.0000	10.0000	0.0000	4.0000
67	311	4.0000	3.0000	1.0000	5.0000	1.0000	6.0000	2.0000	-0.0000	4.0000	8.0000
68	312	10.0000	9.0000	10.0000	9.0000	10.0000	1.0000	10.0000	10.0000	-0.0000	0.0000
69	313	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
70	314	5.0000	5.0000	4.0000	6.0000	6.0000	2.0000	1.0000	10.0000	7.0000	0.0000
71	315	9.0000	7.0000	9.0000	6.0000	8.0000	5.0000	5.0000	10.0000	8.0000	1.0000
72	316	7.0000	7.0000	6.0000	7.0000	8.0000	6.0000	4.0000	10.0000	4.0000	2.0000
73	317	6.0000	6.0000	7.0000	6.0000	5.0000	1.0000	5.0000	8.0000	9.0000	0.0000
74	318	7.0000	6.0000	9.0000	3.0000	8.0000	5.0000	7.0000	10.0000	5.0000	0.0000
75	319	5.0000	7.0000	5.0000	6.0000	7.0000	3.0000	7.0000	10.0000	10.0000	10.0000
76	320	9.0000	9.0000	10.0000	8.0000	10.0000	0.0000	9.0000	10.0000	5.0000	3.0000
77	321	2.0000	0.0000	0.0000	0.0000	10.0000	0.0000	0.0000	5.0000	-0.0000	0.0000
78	322	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	4.0000	2.0000	9.0000	0.0000	8.0000
79	323	5.0000	2.0000	2.0000	0.0000	7.0000	0.0000	8.0000	8.0000	3.0000	0.0000
80	324	4.0000	3.0000	9.0000	2.0000	9.0000	1.0000	9.0000	10.0000	6.0000	0.0000
81	325	0.0000	0.0000	5.0000	0.0000	5.0000	0.0000	5.0000	8.0000	-0.0000	0.0000
82	326	2.0000	2.0000	10.0000	5.0000	10.0000	8.0000	10.0000	10.0000	5.0000	-0.0000
83	327	9.0000	7.0000	7.0000	5.0000	6.0000	6.0000	5.0000	9.0000	7.0000	0.0000
84	328	7.0000	3.0000	10.0000	0.0000	9.0000	0.0000	0.0000	10.0000	10.0000	10.0000

	LABEL	G-F 91	G-F 92	G-F 93	G-F 94	--F 95	--F 96	--F 97	--F 98	--F 99	--F100
1	101	9.0000	10.0000	8.0000	9.0000	4.0000	-0.0000	-0.0000	3.0000	8.0000	5.0000
2	102	-0.0000	6.0000	3.0000	-0.0000	10.0000	10.0000	-0.0000	8.0000	-0.0000	9.0000
3	103	10.0000	10.0000	6.0000	6.0000	-0.0000	0.0000	4.0000	-0.0000	3.0000	-0.0000
4	104	7.0000	8.0000	5.0000	-0.0000	4.0000	0.0000	-0.0000	-0.0000	2.0000	7.0000
5	105	10.0000	9.0000	8.0000	6.0000	5.0000	-0.0000	-0.0000	1.0000	2.0000	-0.0000
6	106	10.0000	10.0000	10.0000	7.0000	6.0000	4.0000	3.0000	3.0000	1.0000	4.0000
7	107	9.0000	9.0000	7.0000	10.0000	6.0000	0.0000	3.0000	2.0000	1.0000	-0.0000
8	108	3.0000	10.0000	8.0000	3.0000	5.0000	5.0000	2.0000	3.0000	1.0000	8.0000
9	109	-0.0000	10.0000	5.0000	1.0000	10.0000	10.0000	-0.0000	10.0000	-0.0000	10.0000
10	110	10.0000	9.0000	5.0000	10.0000	6.0000	10.0000	0.0000	1.0000	-0.0000	10.0000
11	111	10.0000	10.0000	5.0000	10.0000	5.0000	-0.0000	2.0000	5.0000	1.0000	-0.0000
12	112	10.0000	10.0000	10.0000	10.0000	1.0000	9.0000	1.0000	1.0000	-0.0000	10.0000
13	113	1.0000	5.0000	4.0000	2.0000	2.0000	-0.0000	1.0000	4.0000	3.0000	5.0000
14	114	7.5000	10.0000	9.0000	5.0000	7.5000	-0.0000	-0.0000	7.5000	5.0000	6.0000
15	115	7.0000	10.0000	4.0000	2.0000	3.0000	9.0000	5.0000	4.0000	6.0000	10.0000
16	116	-0.0000	-0.0000	-0.0000	-0.0000	10.0000	10.0000	-0.0000	7.0000	1.0000	5.0000
17	117	6.0000	8.0000	3.0000	5.0000	3.0000	6.0000	3.0000	5.0000	2.0000	3.0000
18	118	5.0000	9.0000	7.0000	9.0000	5.0000	2.0000	2.0000	4.0000	1.0000	8.0000
19	119	10.0000	10.0000	9.0000	9.0000	5.0000	-0.0000	-0.0000	1.0000	1.0000	10.0000
20	120	10.0000	10.0000	2.0000	-0.0000	2.0000	4.0000	-0.0000	3.0000	1.0000	5.0000
21	121	6.0000	9.0000	3.0000	10.0000	6.0000	6.0000	6.0000	3.0000	2.0000	10.0000
22	122	10.0000	10.0000	9.0000	10.0000	9.0000	-0.0000	-0.0000	10.0000	2.0000	4.0000
23	123	6.0000	10.0000	-0.0000	2.0000	8.0000	-0.0000	-0.0000	4.0000	1.0000	10.0000
24	124	10.0000	10.0000	10.0000	10.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	10.0000
25	125	10.0000	10.0000	-0.0000	8.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	8.0000
26	126	4.0000	10.0000	2.0000	-0.0000	8.0000	7.0000	-0.0000	9.0000	1.0000	9.0000
27	127	5.0000	10.0000	9.0000	5.0000	8.0000	-0.0000	3.0000	7.0000	8.0000	10.0000
28	128	-0.0000	7.0000	8.0000	2.0000	5.0000	10.0000	2.0000	4.0000	3.0000	9.0000
29	201	1.0000	6.0000	7.0000	-0.0000	5.0000	8.0000	0.0000	8.0000	5.0000	7.0000
30	202	-0.0000	10.0000	1.0000	0.0000	1.0000	-0.0000	-0.0000	7.0000	2.0000	10.0000
31	203	3.0000	10.0000	7.0000	1.0000	2.0000	10.0000	-0.0000	7.0000	2.0000	10.0000
32	204	7.0000	8.0000	4.0000	5.0000	7.0000	1.0000	3.0000	7.0000	6.0000	8.0000
33	205	2.0000	9.0000	8.0000	-0.0000	10.0000	10.0000	-0.0000	8.0000	9.0000	9.0000
34	206	4.0000	7.0000	7.0000	1.0000	10.0000	5.5000	1.0000	5.0000	5.0000	4.0000
35	207	5.0000	9.0000	9.0000	2.0000	6.0000	7.0000	1.0000	3.0000	2.0000	9.0000
36	208	1.3000	10.0000	5.0000	1.0000	7.0000	2.0000	1.0000	7.0000	5.6000	7.0000
37	209	7.0000	8.0000	8.0000	5.0000	5.0000	5.0000	5.0000	9.0000	1.0000	10.0000
38	210	10.0000	10.0000	9.0000	10.0000	10.0000	10.0000	2.0000	10.0000	-0.0000	10.0000
39	211	0.0000	0.0000	-0.0000	0.0000	6.0000	6.0000	-0.0000	5.0000	2.0000	6.0000
40	212	0.0000	10.0000	4.0000	0.0000	10.0000	10.0000	-0.0000	10.0000	7.0000	8.0000
41	213	6.0000	8.0000	5.0000	3.0000	9.0000	-0.0000	-0.0000	10.0000	10.0000	-0.0000
42	214	0.0000	4.0000	2.0000	0.0000	10.0000	10.0000	9.0000	3.0000	-0.0000	10.0000
43	215	5.0000	8.0000	7.0000	5.0000	7.0000	-0.0000	-0.0000	8.0000	1.0000	8.0000
44	216	8.0000	10.0000	6.5000	6.5000	10.0000	6.0000	2.0000	9.0000	1.0000	7.5000
45	217	1.0000	7.0000	6.0000	5.0000	10.0000	10.0000	3.0000	8.0000	5.0000	8.0000
46	218	3.0000	9.0000	7.0000	0.0000	10.0000	5.0000	-0.0000	8.0000	2.0000	10.0000
47	219	8.0000	9.0000	6.0000	0.0000	-0.0000	9.0000	0.0000	1.0000	1.0000	9.0000
48	220	0.0000	2.0000	7.0000	0.0000	10.0000	7.0000	0.0000	10.0000	0.0000	4.0000
49	221	3.0000	8.0000	7.0000	10.0000	10.0000	8.0000	0.0000	10.0000	-0.0000	8.0000
50	222	8.0000	10.0000	10.0000	3.0000	8.0000	10.0000	0.0000	-0.0000	5.0000	8.0000

Appendix B1 (Contd)

	LABEL	G-F 91	G-F 92	G-F 93	G-F 94	--F 95	--F 96	--F 97	--F 98	--F 99	--F100
51	223	10.0000	4.0000	0.0000	6.0000	9.0000	8.0000	-0.0000	10.0000	-0.0000	9.0000
52	224	2.0000	8.0000	9.0000	0.0000	10.0000	8.0000	-0.0000	-0.0000	0.0000	5.0000
53	225	4.0000	4.0000	3.0000	-0.0000	10.0000	10.0000	0.0000	9.0000	1.0000	10.0000
54	226	4.0000	3.0000	7.0000	3.0000	-0.0000	-0.0000	0.0000	7.0000	0.0000	2.0000
55	227	5.0000	10.0000	9.0000	5.0000	10.0000	5.0000	2.0000	10.0000	-0.0000	5.0000
56	228	10.0000	10.0000	8.0000	10.0000	10.0000	10.0000	-0.0000	10.0000	7.0000	9.0000
57	301	2.0000	1.0000	0.0000	-0.0000	7.0000	7.0000	-0.0000	3.0000	1.0000	3.0000
58	302	0.0000	3.0000	1.0000	1.0000	10.0000	9.0000	-0.0000	2.0000	2.0000	10.0000
59	303	10.0000	3.0000	-0.0000	10.0000	10.0000	10.0000	10.0000	8.0000	-0.0000	10.0000
60	304	8.0000	9.0000	5.0000	6.0000	10.0000	10.0000	0.0000	10.0000	2.0000	10.0000
61	305	0.0000	10.0000	3.0000	0.0000	10.0000	10.0000	-0.0000	10.0000	3.0000	9.0000
62	306	2.0000	8.0000	8.0000	3.0000	7.0000	10.0000	-0.0000	7.0000	7.0000	10.0000
63	307	10.0000	7.0000	0.0000	10.0000	10.0000	10.0000	10.0000	8.0000	0.0000	10.0000
64	308	6.0000	7.0000	7.0000	-0.0000	10.0000	10.0000	0.0000	10.0000	6.0000	10.0000
65	309	10.0000	7.0000	5.0000	10.0000	10.0000	10.0000	0.0000	7.0000	0.0000	10.0000
66	310	9.0000	0.0000	4.0000	9.0000	3.0000	5.0000	0.0000	9.0000	-0.0000	2.0000
67	311	0.0000	4.0000	3.0000	-0.0000	-0.0000	-0.0000	10.0000	5.0000	10.0000	0.0000
68	312	10.0000	8.0000	8.0000	1.0000	10.0000	10.0000	5.0000	10.0000	1.0000	10.0000
69	313	10.0000	10.0000	10.0000	10.0000	9.0000	10.0000	7.0000	10.0000	5.0000	10.0000
70	314	8.0000	6.0000	8.0000	1.0000	10.0000	10.0000	-0.0000	10.0000	0.0000	10.0000
71	315	10.0000	8.0000	6.0000	4.0000	4.0000	9.0000	0.0000	6.0000	8.0000	10.0000
72	316	10.0000	8.0000	4.0000	2.0000	10.0000	10.0000	0.0000	10.0000	1.0000	10.0000
73	317	2.0000	6.0000	5.0000	2.0000	6.0000	10.0000	1.0000	6.0000	3.0000	10.0000
74	318	0.0000	6.0000	6.0000	0.0000	10.0000	10.0000	-0.0000	10.0000	1.0000	9.0000
75	319	10.0000	4.0000	7.0000	10.0000	10.0000	8.0000	-0.0000	10.0000	2.0000	9.0000
76	320	9.0000	9.0000	6.0000	0.0000	10.0000	10.0000	0.0000	10.0000	2.0000	10.0000
77	321	-0.0000	-0.0000	0.0000	0.0000	0.0000	10.0000	0.0000	10.0000	-0.0000	10.0000
78	322	10.0000	0.0000	0.0000	8.0000	0.0000	10.0000	-0.0000	0.0000	0.0000	10.0000
79	323	5.0000	-0.0000	2.0000	0.0000	0.0000	5.0000	-0.0000	7.0000	2.0000	0.0000
80	324	9.0000	7.0000	0.0000	0.0000	10.0000	8.0000	5.0000	7.0000	-0.0000	9.0000
81	325	-0.0000	8.0000	-0.0000	0.0000	10.0000	10.0000	0.0000	10.0000	0.0000	10.0000
82	326	2.0000	5.0000	5.0000	2.0000	2.0000	10.0000	-0.0000	2.0000	0.0000	10.0000
83	327	1.0000	7.0000	9.0000	4.0000	10.0000	8.0000	0.0000	10.0000	7.0000	7.0000
84	329	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	0.0000	10.0000	8.0000	10.0000

APPENDIX B2

Subjects Given Ordinariness Instructions

	LABEL	GMF 1	GMF 2	GMF 3	GMF 4	GMF 5	GMF 6	GMF 7	GMF 8	GMF 9	GMF 10
1	401	6.0	10.0	9.0	10.0	10.0	2.0	7.0	10.0	10.0	10.0
2	402	10.0	10.0	10.0	10.0	10.0	5.0	10.0	9.0	10.0	10.0
3	403	10.0	10.0	10.0	10.0	10.0	0.	10.0	10.0	10.0	10.0
4	404	10.0	10.0	9.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0
5	405	10.0	10.0	10.0	10.0	10.0	9.0	10.0	4.0	10.0	10.0
6	406	10.0	10.0	10.0	10.0	10.0	8.0	10.0	0.	10.0	10.0
7	407	10.0	10.0	10.0	10.0	10.0	9.0	10.0	7.0	10.0	10.0
8	408	10.0	10.0	10.0	10.0	10.0	5.0	10.0	7.0	10.0	10.0
9	409	8.0	10.0	9.0	10.0	10.0	5.0	10.0	10.0	10.0	6.0
10	410	10.0	9.0	9.0	9.0	9.0	6.0	7.0	8.0	9.0	9.0
11	411	10.0	10.0	10.0	10.0	10.0	5.0	10.0	10.0	10.0	9.2
12	412	7.0	7.0	10.0	10.0	10.0	0.	7.0	1.0	7.0	9.0
13	413	9.0	10.0	10.0	10.0	10.0	10.0	10.0	8.0	8.0	10.0
14	414	10.0	10.0	10.0	10.0	10.0	0.	10.0	10.0	10.0	10.0
15	415	8.0	0.	10.0	10.0	10.0	2.0	0.	10.0	10.0	10.0
16	416	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
17	417	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
18	418	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
19	419	10.0	10.0	10.0	10.0	10.0	3.0	10.0	5.0	10.0	10.0
20	420	10.0	5.0	9.0	10.0	10.0	4.0	8.0	2.0	9.0	6.0
21	421	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.0	10.0	10.0
22	422	9.0	10.0	8.0	10.0	10.0	8.0	10.0	10.0	10.0	10.0
23	423	9.0	10.0	10.0	10.0	10.0	9.0	10.0	10.0	10.0	10.0
24	424	10.0	10.0	10.0	10.0	10.0	10.0	9.0	7.0	10.0	10.0
25	425	9.0	9.0	10.0	10.0	9.0	2.0	8.0	8.0	9.0	9.0
26	426	8.0	8.0	9.0	10.0	10.0	3.0	8.0	6.0	7.0	8.0
27	427	10.0	10.0	10.0	10.0	10.0	8.0	9.0	9.0	10.0	10.0
28	428	10.0	10.0	10.0	10.0	10.0	2.0	9.0	5.0	9.0	10.0

Appendix B2 (Contd)

	LABEL	GMF 11	GMF 12	GMF 13	GMF 14	GMF 15	-MF 16	-MF 17	-MF 18	-MF 19	-MF 20
1	401	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	8.0
2	402	5.0	10.0	6.0	10.0	10.0	5.0	5.0	5.0	8.0	5.0
3	403	10.0	10.0	5.0	10.0	10.0	0.	0.	0.	0.	0.
4	404	9.0	10.0	8.0	10.0	10.0	10.0	9.0	8.0	10.0	9.0
5	405	9.0	10.0	8.0	9.0	10.0	10.0	10.0	10.0	10.0	10.0
6	406	9.0	10.0	1.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
7	407	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	8.0
8	408	8.0	10.0	6.0	10.0	10.0	10.0	9.0	9.0	9.0	8.0
9	409	9.0	10.0	5.0	9.0	10.0	10.0	9.0	3.0	6.0	9.0
10	410	9.0	9.0	9.0	9.0	8.0	9.0	6.0	5.0	7.0	5.0
11	411	9.0	10.0	10.0	10.0	10.0	9.8	7.0	9.0	9.0	9.8
12	412	1.0	8.0	0.	3.0	10.0	9.0	9.0	7.0	2.0	10.0
13	413	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
14	414	10.0	10.0	9.0	10.0	10.0	10.0	10.0	10.0	8.0	10.0
15	415	2.0	0.	3.0	0.	10.0	10.0	5.0	4.0	3.0	0.
16	416	10.0	10.0	10.0	10.0	10.0	0.	10.0	0.	0.	0.
17	417	10.0	10.0	8.0	10.0	10.0	10.0	10.0	0.	5.0	4.0
18	418	10.0	10.0	10.0	10.0	10.0	9.0	0.	0.	8.0	8.0
19	419	7.0	10.0	7.0	7.0	10.0	10.0	7.0	5.0	7.0	7.0
20	420	1.0	10.0	5.0	8.0	10.0	10.0	10.0	9.0	5.0	9.0
21	421	9.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	7.0	9.0
22	422	10.0	10.0	9.0	10.0	10.0	10.0	9.0	9.0	9.0	6.0
23	423	10.0	10.0	8.0	10.0	10.0	10.0	8.0	10.0	1.0	3.0
24	424	9.0	10.0	10.0	10.0	10.0	9.0	10.0	8.0	9.0	9.0
25	425	8.0	9.0	8.0	8.0	8.0	10.0	9.0	7.0	8.0	10.0
26	426	7.0	9.0	5.0	8.0	9.0	9.0	6.0	6.0	7.0	6.0
27	427	10.0	10.0	7.0	8.0	10.0	10.0	9.0	9.0	10.0	9.0
28	428	3.0	10.0	8.0	8.0	8.0	5.0	4.0	2.0	2.0	1.0

Appendix B2 (Contd)

	LABEL	-MF 21	-MF 22	-MF 23	-MF 24	-MF 25	-MF 26	-MF 27	-MF 28	-MF 29	-MF 30
1	401	2.0	2.0	9.0	2.0	2.0	3.0	2.0	1.0	2.0	2.0
2	402	5.0	6.0	9.0	4.0	7.0	7.0	5.0	6.0	6.0	7.0
3	403	0.	10.0	0.	0.	0.	10.0	6.0	0.	4.0	10.0
4	404	4.0	6.0	4.0	3.0	9.5	10.0	4.0	4.0	5.0	4.0
5	405	5.0	9.0	3.0	5.0	5.0	10.0	9.0	8.0	7.0	7.0
6	406	0.	8.0	1.0	2.0	0.	6.0	1.0	2.0	8.0	1.0
7	407	8.0	10.0	6.0	5.0	6.0	10.0	8.0	10.0	7.0	9.0
8	408	8.0	10.0	5.0	4.0	3.0	10.0	4.0	10.0	7.0	8.0
9	409	8.0	10.0	7.0	5.0	7.0	10.0	7.0	10.0	7.0	8.0
10	410	5.0	7.0	5.0	4.0	6.0	9.0	6.0	9.0	5.0	5.0
11	411	9.0	10.0	6.0	4.0	7.0	10.0	9.8	8.0	9.7	9.0
12	412	0.	0.	0.	0.	0.	9.0	0.	0.	0.	9.0
13	413	9.0	10.0	6.0	8.0	10.0	10.0	9.0	5.0	10.0	10.0
14	414	5.0	1.0	0.	0.	3.0	2.0	10.0	7.0	6.0	10.0
15	415	0.	5.0	0.	0.	0.	0.	0.	0.	0.	10.0
16	416	7.0	10.0	8.0	0.	6.0	10.0	8.0	10.0	10.0	10.0
17	417	0.	10.0	0.	0.	0.	5.0	4.0	2.0	4.0	2.0
18	418	9.0	9.0	10.0	9.0	8.0	9.0	8.0	8.0	9.0	9.0
19	419	5.0	5.0	3.0	3.0	5.0	8.0	7.0	2.0	7.0	7.0
20	420	1.0	9.0	8.0	1.0	0.	0.	3.0	3.0	0.	0.
21	421	6.0	7.0	6.0	3.0	6.0	8.0	5.0	2.0	5.0	8.0
22	422	8.0	9.0	8.0	8.0	9.0	10.0	7.0	3.0	7.0	8.0
23	423	0.	10.0	2.0	1.0	3.0	10.0	1.0	1.0	3.0	2.0
24	424	7.0	10.0	5.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0
25	425	6.0	9.0	2.0	6.0	6.0	7.0	6.0	4.0	7.0	4.0
26	426	5.0	9.0	2.0	3.0	2.0	10.0	7.0	2.0	7.0	6.0
27	427	8.0	3.0	2.0	8.0	7.0	10.0	9.0	10.0	9.0	9.0
28	428	1.0	5.0	4.0	1.0	5.0	6.0	1.0	0.	3.0	1.0

Appendix B2 (Contd)

	LABEL	-MF 31	-MF 32	G-- 33	G-- 34	G-- 35	G-- 36	G-- 37	G-- 38	G-- 39	G-- 40
1	401	1.0	3.0	2.0	2.0	4.0	1.0	1.0	4.0	3.0	3.0
2	402	5.0	6.0	4.0	4.0	1.0	3.0	3.0	4.0	6.0	4.0
3	403	4.0	0.	0.	1.0	0.	0.	4.0	4.0	6.0	0.
4	404	7.0	5.0	1.0	4.0	2.0	1.0	2.0	5.0	10.0	6.0
5	405	9.0	6.0	0.	0.	0.	1.0	0.	1.0	1.0	1.0
6	406	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.0
7	407	8.0	8.0	2.0	5.0	3.0	7.0	7.0	7.0	7.0	5.0
8	408	5.0	6.0	1.0	2.0	1.0	3.0	4.0	3.0	3.0	3.0
9	409	4.0	8.0	0.	3.0	0.	7.0	0.	8.0	2.0	9.0
10	410	7.0	6.0	3.0	2.0	1.0	2.0	3.0	3.0	4.0	3.0
11	411	9.0	9.0	3.0	3.0	6.0	3.0	0.	2.0	6.0	0.
12	412	5.0	8.0	0.	0.	0.	0.	0.	0.	0.	0.
13	413	9.0	9.0	10.0	10.0	4.0	7.0	6.0	9.0	4.0	4.0
14	414	8.0	7.0	0.	0.	4.0	0.	0.	8.0	0.	4.0
15	415	6.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
16	416	8.0	8.0	7.0	3.0	8.0	4.0	5.0	2.0	3.0	3.0
17	417	2.0	4.0	1.0	0.	0.	0.	1.0	3.0	2.0	7.0
18	418	8.0	9.0	1.0	6.0	2.0	0.	3.0	5.0	8.0	10.0
19	419	9.0	5.0	0.	0.	1.0	1.0	0.	5.0	3.0	3.0
20	420	5.0	1.0	0.	0.	2.0	1.0	0.	1.0	0.	0.
21	421	9.0	6.0	1.0	1.0	4.0	0.	1.0	1.0	4.0	1.0
22	422	3.0	7.0	3.0	5.0	0.	7.0	4.0	8.0	6.0	7.0
23	423	1.0	1.0	0.	2.0	0.	3.0	0.	3.0	2.0	2.0
24	424	7.0	7.0	8.0	7.0	3.0	3.0	6.0	10.0	9.0	10.0
25	425	8.0	5.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	2.0
26	426	9.0	6.0	3.0	2.0	1.0	2.0	2.0	2.0	3.0	5.0
27	427	9.0	9.0	8.0	6.0	2.0	6.0	3.0	5.0	7.0	5.0
28	428	5.0	2.0	0.	0.	4.0	2.0	0.	3.0	5.0	4.0

Appendix B2 (Contd)

	LABEL	G-- 41	G-- 42	G-- 43	G-- 44	G-- 45	G-- 46	G-- 47	-M- 48	-M- 49	-M- 50
1	401	1.0	4.0	4.0	5.0	2.0	8.0	2.0	1.0	2.0	2.0
2	402	3.0	5.0	4.0	3.0	4.0	4.0	4.0	6.0	5.0	6.0
3	403	1.0	1.0	1.0	2.0	0.	7.0	1.0	0.	0.	0.
4	404	3.0	6.0	7.0	2.0	3.0	5.0	4.0	3.0	4.0	7.0
5	405	0.	0.	0.	2.0	0.	1.0	0.	1.0	1.0	10.0
6	406	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	407	5.0	5.5	7.0	7.0	3.5	7.0	7.0	4.0	3.0	7.0
8	408	2.0	2.0	2.0	3.0	2.0	5.0	4.0	3.0	1.0	4.0
9	409	1.0	2.0	1.0	1.0	0.	1.0	0.	7.0	7.0	8.0
10	410	1.0	4.0	3.0	2.0	1.0	7.0	2.0	4.0	6.0	6.0
11	411	1.0	4.0	8.0	2.0	4.0	1.0	3.0	3.0	6.0	7.0
12	412	0.	0.	0.	0.	0.	0.	0.	0.	0.	8.0
13	413	8.0	8.0	9.0	5.0	9.0	8.0	7.0	10.0	10.0	10.0
14	414	0.	0.	0.	0.	0.	0.	3.0	0.	0.	1.0
15	415	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16	416	5.0	3.0	10.0	7.0	3.0	10.0	3.0	5.0	8.0	9.0
17	417	1.0	5.0	2.0	0.	0.	2.0	0.	1.0	7.0	3.0
18	418	2.0	8.0	7.0	5.0	3.0	9.0	1.0	7.0	8.0	7.0
19	419	0.	0.	3.0	0.	0.	2.0	3.0	5.0	3.0	8.0
20	420	2.0	0.	0.	0.	6.0	3.0	0.	1.0	0.	1.0
21	421	0.	1.0	3.0	4.0	4.0	5.0	0.	2.0	2.0	2.0
22	422	0.	8.0	3.0	8.0	8.0	8.0	6.0	2.0	6.0	7.0
23	423	0.	3.0	2.0	4.0	3.0	2.0	2.0	3.0	1.0	6.0
24	424	5.0	9.0	9.0	7.0	8.0	7.0	8.0	8.0	8.0	8.0
25	425	3.0	2.0	3.0	3.0	2.0	3.0	1.0	4.0	6.0	3.0
26	426	3.0	2.0	6.0	1.0	2.0	8.0	3.0	1.0	2.0	7.0
27	427	4.0	7.0	4.0	6.0	7.0	4.0	6.0	9.0	5.0	9.0
28	428	0.	0.	1.0	1.0	1.0	4.0	0.	2.0	5.0	5.0

Appendix B2 (Contd)

	LABEL	-M- 51	-M- 52	-M- 53	-M- 54	-M- 55	-M- 56	-M- 57	-M- 58	-M- 59	-M- 60
1	401	2.0	4.0	2.0	2.0	2.0	2.0	1.0	2.0	3.0	2.0
2	402	5.0	6.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
3	403	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	404	4.0	6.0	2.0	3.0	1.0	5.0	3.0	1.0	3.0	1.0
5	405	7.0	7.0	0.	5.0	5.0	5.0	1.0	0.	3.0	0.
6	406	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	407	7.0	7.0	1.0	6.0	1.0	5.0	4.0	2.0	5.0	4.0
8	408	2.0	3.0	3.0	2.0	0.	0.	6.0	2.0	4.0	1.0
9	409	8.0	6.0	0.	2.0	6.0	7.0	6.0	4.0	7.0	4.0
10	410	6.0	6.0	2.0	4.0	5.0	7.0	5.0	3.0	6.0	5.0
11	411	7.0	8.0	0.	4.0	6.0	7.0	5.0	6.0	8.0	7.0
12	412	0.	0.	0.	0.	0.	8.0	0.	0.	0.	0.
13	413	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	10.0	9.0
14	414	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	415	0.	0.	5.0	0.	0.	0.	0.	0.	0.	0.
16	416	8.0	8.0	8.0	5.0	7.0	7.0	7.0	8.0	5.0	3.0
17	417	3.0	4.0	3.0	0.	4.0	3.0	0.	2.0	2.0	3.0
18	418	7.0	8.0	8.0	5.0	5.0	7.0	6.0	4.0	7.0	4.0
19	419	6.0	5.0	1.0	0.	0.	3.0	3.0	3.0	5.0	0.
20	420	0.	1.0	0.	0.	0.	2.0	0.	0.	0.	0.
21	421	3.0	8.0	0.	2.0	2.0	2.0	2.0	2.0	2.0	2.0
22	422	6.0	8.0	3.0	2.0	3.0	7.0	3.0	2.0	4.0	2.0
23	423	3.0	5.0	0.	1.0	0.	1.0	2.0	2.0	3.0	2.0
24	424	8.0	8.0	7.0	8.0	8.0	9.0	8.0	8.0	8.0	4.0
25	425	5.0	7.0	3.0	3.0	2.0	5.0	3.0	2.0	3.0	1.0
26	426	2.0	6.0	3.0	2.0	1.0	4.0	2.0	3.0	2.0	2.0
27	427	8.0	8.0	6.0	7.0	7.0	9.0	5.0	9.0	8.0	3.0
28	428	4.0	3.0	1.0	0.	2.0	0.	0.	0.	1.0	3.0

Appendix B2 (Contd)

	LABEL	-M- 61	-M- 62	--- 63	--- 64	--- 65	--- 66	--- 67	--- 68	--- 69	--- 70
1	401	2.0	2.0	0.	0.	1.0	0.	0.	1.0	1.0	2.0
2	402	4.0	3.0	2.0	1.0	1.0	1.0	2.0	3.0	0.	3.0
3	403	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	404	1.0	3.0	0.	2.0	1.0	0.	0.	1.0	1.0	1.0
5	405	0.	4.0	0.	0.	0.	0.	0.	0.	0.	0.
6	406	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	407	2.0	5.0	3.0	2.0	0.	0.	1.0	0.	1.0	1.0
8	408	1.0	2.0	0.	0.	0.	0.	0.	0.	0.	0.
9	409	3.0	7.0	1.0	2.0	5.0	1.0	4.0	0.	2.0	1.0
10	410	4.0	6.0	1.0	2.0	3.0	1.0	2.0	2.0	1.0	3.0
11	411	3.0	6.0	0.	0.	1.0	1.0	0.	2.0	1.0	0.
12	412	0.	2.0	0.	0.	0.	0.	0.	0.	0.	0.
13	413	10.0	9.0	10.0	10.0	8.0	9.0	8.0	9.0	5.0	7.0
14	414	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	415	0.	7.0	0.	0.	0.	0.	0.	0.	0.	0.
16	416	3.0	7.0	3.0	3.0	3.0	3.0	3.0	3.0	5.0	4.0
17	417	0.	4.0	0.	0.	2.0	0.	0.	0.	0.	1.0
18	418	5.0	7.0	0.	2.0	3.0	0.	2.0	0.	4.0	1.0
19	419	1.0	3.0	0.	0.	0.	0.	0.	0.	0.	0.
20	420	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
21	421	2.0	2.0	0.	0.	1.0	0.	0.	0.	1.0	0.
22	422	0.	3.0	0.	0.	2.0	0.	0.	0.	0.	1.0
23	423	2.0	0.	0.	0.	1.0	0.	0.	0.	0.	1.0
24	424	8.0	8.0	7.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0
25	425	2.0	2.0	1.0	1.0	2.0	3.0	2.0	2.0	1.0	2.0
26	426	1.0	1.0	2.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0
27	427	5.0	8.0	4.0	7.0	6.0	4.0	4.0	4.0	0.	6.0
28	428	2.0	2.0	0.	0.	0.	1.0	0.	1.0	0.	0.

Appendix B2 (Contd)

	LABEL	--- 71	--- 72	--- 73	--- 74	--- 75	--- 76	--- 77	GM- 78	GM- 79	GM- 80
1	401	2.0	1.0	2.0	4.0	2.0	2.0	2.0	9.0	9.0	7.0
2	402	2.0	3.0	3.0	4.0	4.0	2.0	2.0	4.0	8.0	8.0
3	403	0.	0.	0.	0.	0.	0.	0.	8.0	8.0	4.0
4	404	2.0	2.0	0.	0.	2.0	0.	0.5	7.0	7.0	7.0
5	405	0.	0.	0.	0.	0.	0.	0.	6.0	9.0	2.0
6	406	0.	0.	0.	0.	0.	0.	0.	5.0	5.0	0.
7	407	3.0	1.0	5.0	2.0	7.0	4.0	3.0	9.0	6.0	5.0
8	408	0.	0.	0.	2.0	0.	0.	4.0	10.0	9.0	7.0
9	409	0.	0.	1.0	0.	6.0	3.0	1.0	7.0	8.0	4.0
10	410	1.0	5.0	1.0	2.0	2.0	3.0	4.0	7.0	7.0	7.0
11	411	4.0	3.0	3.0	3.0	2.0	2.0	0.	9.0	8.0	8.0
12	412	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
13	413	9.0	9.0	10.0	9.0	9.0	8.0	6.0	10.0	8.0	6.0
14	414	0.	0.	0.	0.	0.	0.	0.	7.0	1.0	9.0
15	415	0.	0.	0.	0.	0.	0.	0.	0.	1.0	0.
16	416	5.0	6.0	3.0	2.0	3.0	3.0	3.0	10.0	10.0	10.0
17	417	2.0	0.	0.	0.	0.	0.	0.	10.0	1.0	5.0
18	418	3.0	3.0	3.0	0.	0.	1.0	0.	10.0	10.0	10.0
19	419	0.	0.	0.	0.	0.	1.0	3.0	7.0	8.0	2.0
20	420	0.	0.	0.	0.	2.0	0.	0.	2.0	3.0	0.
21	421	0.	0.	0.	1.0	3.0	0.	0.	10.0	8.0	6.0
22	422	1.0	2.0	2.0	4.0	0.	0.	0.	10.0	9.0	10.0
23	423	0.	0.	0.	0.	0.	0.	0.	10.0	6.0	9.0
24	424	7.0	7.0	8.0	7.0	2.0	8.0	7.0	10.0	9.0	5.0
25	425	2.0	2.0	2.0	2.0	1.0	1.0	2.0	6.0	7.0	2.0
26	426	2.0	3.0	2.0	3.0	1.0	2.0	2.0	5.0	2.0	2.0
27	427	7.0	6.0	4.0	6.0	1.0	3.0	2.0	9.0	9.0	3.0
28	428	0.	0.	0.	0.	5.0	0.	0.	10.0	8.0	8.0

Appendix B2 (Contd)

	LABEL	GM- 81	GM- 82	GM- 83	GM- 84	GM- 85	GM- 86	GM- 87	G-F 88	G-F 89	G-F 90
1	401	10.0	9.0	10.0	10.0	10.0	8.0	8.0	8.0	5.0	2.0
2	402	8.0	6.0	9.0	9.0	9.0	2.0	9.0	8.0	4.0	4.0
3	403	9.0	8.0	10.0	10.0	10.0	6.0	10.0	7.0	7.0	7.0
4	404	9.0	10.0	10.0	8.0	7.0	8.0	6.0	10.0	7.0	5.0
5	405	6.0	5.0	9.0	6.0	5.0	3.0	8.0	10.0	1.0	0.
6	406	1.0	2.0	8.0	1.0	10.0	2.0	10.0	10.0	10.0	8.0
7	407	9.0	6.0	9.0	9.0	8.0	7.0	9.0	10.0	9.0	7.0
8	408	9.0	5.0	8.0	9.0	4.0	8.0	6.0	9.0	10.0	1.0
9	409	9.0	7.0	10.0	3.0	8.0	2.0	9.0	10.0	2.0	0.
10	410	7.0	6.0	8.0	5.0	8.0	5.0	7.0	9.0	9.0	9.0
11	411	1.0	7.0	10.0	9.0	8.0	8.0	10.0	10.0	1.0	0.
12	412	1.0	0.	2.0	0.	2.0	0.	0.	8.0	0.	0.
13	413	4.0	3.0	10.0	10.0	8.0	8.0	10.0	9.0	5.0	4.0
14	414	0.	4.0	5.0	0.	8.0	0.	4.0	7.0	10.0	0.
15	415	0.	0.	0.	0.	1.0	0.	0.	1.0	5.0	0.
16	416	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
17	417	10.0	10.0	10.0	10.0	8.0	7.0	10.0	4.0	9.0	0.
18	418	10.0	8.0	10.0	10.0	10.0	10.0	9.0	10.0	10.0	0.
19	419	5.0	5.0	8.0	5.0	8.0	1.0	7.0	10.0	3.0	7.0
20	420	2.0	1.0	8.0	1.0	1.0	2.0	4.0	8.0	0.	0.
21	421	10.0	10.0	10.0	10.0	10.0	8.0	9.0	10.0	3.0	7.0
22	422	10.0	8.0	10.0	9.0	10.0	10.0	10.0	5.0	10.0	3.0
23	423	9.0	9.0	10.0	8.0	10.0	9.0	10.0	7.0	2.0	7.0
24	424	9.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	7.0	9.0
25	425	4.0	7.0	8.0	2.0	9.0	3.0	8.0	9.0	9.0	3.0
26	426	4.0	5.0	6.0	4.0	4.0	0.	6.0	10.0	4.0	4.0
27	427	9.0	8.0	8.0	8.0	4.0	8.0	5.0	10.0	3.0	5.0
28	428	5.0	5.0	8.0	1.0	8.0	9.0	5.0	4.0	1.0	0.

Appendix B2 (Contd)

	LABEL	G-F 91	G-F 92	G-F 93	G-F 94	--F 95	--F 96	--F 97	--F 98	--F 99	--F100
1	401	6.0	7.0	4.0	8.0	2.0	6.0	1.0	8.0	2.0	6.0
2	402	5.0	7.0	3.0	5.0	5.0	5.0	0.	4.0	3.0	8.0
3	403	9.0	9.0	6.0	10.0	0.	0.	0.	0.	0.	1.0
4	404	8.0	10.0	9.0	6.0	10.0	9.0	3.0	10.0	2.0	6.0
5	405	3.0	3.0	2.0	0.	3.0	10.0	0.	2.0	3.0	10.0
6	406	9.0	9.0	3.0	7.0	10.0	10.0	7.0	10.0	0.	9.0
7	407	7.0	7.0	7.0	7.0	9.0	8.0	0.	6.0	6.0	8.0
8	408	0.	10.0	7.0	5.0	7.0	9.0	0.	8.0	2.0	10.0
9	409	4.0	9.0	6.0	3.0	8.0	7.0	2.0	7.0	3.0	10.0
10	410	9.0	7.0	7.0	9.0	7.0	7.0	0.	4.0	6.0	9.0
11	411	4.0	8.0	5.0	4.0	1.0	9.8	0.	3.0	8.0	9.0
12	412	0.	0.	0.	0.	7.0	8.0	6.0	1.0	0.	10.0
13	413	10.0	9.0	7.0	8.0	7.0	10.0	3.0	7.5	6.0	9.0
14	414	3.0	6.0	5.0	0.	0.	9.0	0.	10.0	0.	4.0
15	415	0.	0.	0.	0.	10.0	10.0	0.	1.0	1.0	0.
16	416	10.0	10.0	2.0	10.0	0.	10.0	10.0	0.	6.0	10.0
17	417	0.	10.0	3.0	0.	7.0	0.	0.	5.0	1.0	10.0
18	418	0.	10.0	7.0	5.0	6.0	10.0	0.	3.0	6.0	10.0
19	419	7.0	8.0	3.0	7.0	7.0	10.0	0.	5.0	0.	7.0
20	420	0.	3.0	3.0	0.	10.0	8.0	0.	8.0	0.	10.0
21	421	7.0	8.0	6.0	7.0	8.0	8.0	0.	8.0	1.0	10.0
22	422	6.0	10.0	4.0	4.0	4.0	9.0	3.0	9.0	2.0	10.0
23	423	10.0	4.0	1.0	7.0	0.	5.0	0.	5.0	1.0	5.0
24	424	10.0	10.0	8.0	8.0	7.0	9.0	7.0	9.0	8.0	8.0
25	425	9.0	8.0	6.0	8.0	9.0	9.0	2.0	8.0	2.0	10.0
26	426	5.0	7.0	4.0	5.0	1.0	9.0	7.0	5.0	3.0	10.0
27	427	7.0	10.0	10.0	5.0	5.0	10.0	5.0	3.0	6.0	10.0
28	428	0.	10.0	4.0	0.	1.0	3.0	0.	1.0	3.0	7.0

APPENDIX C

Complete Factor Loadings and Factor Scores After an Orthogonal Rotation

Appendix C

Orthogonal Rotation--Factor Loadings

				G	M	F
1	GMF	1	3.1383	1.4243	1.6720	-0.1751
2	GMF	2	3.1721	1.7103	1.2361	-0.0803
3	GMF	3	3.4590	1.4402	1.1187	-0.0488
4	GMF	4	3.5915	1.5269	0.8539	0.1614
5	GMF	5	3.5630	1.4190	1.2863	0.0259
6	GMF	6	1.2894	1.7657	1.2248	0.3218
7	GMF	7	2.9010	1.7106	1.6157	-0.1578
8	GMF	8	1.8312	1.9775	1.1521	0.5263
9	GMF	9	3.1806	1.5249	1.6551	-0.2111
10	GMF	10	3.3110	1.4947	1.5081	-0.1228
11	GMF	11	1.7622	2.1512	1.6204	-0.3757
12	GMF	12	3.2288	1.6215	1.4908	-0.1553
13	GMF	13	2.2870	1.7509	1.6693	-0.2264
14	GMF	14	2.9109	1.7104	1.6226	-0.2908
15	GMF	15	3.1187	1.6288	1.5639	-0.1378
16	-MF	16	3.8168	0.2560	0.7060	0.3608
17	-MF	17	3.1742	0.2942	0.9131	0.4017
18	-MF	18	2.9707	-0.6638	0.5450	1.3243
19	-MF	19	3.0072	-0.1484	1.1485	0.9286
20	-MF	20	3.4167	-0.6563	1.0460	0.9755
21	-MF	21	0.8627	0.0501	2.4774	0.5317
22	-MF	22	2.6332	0.7977	1.6771	0.0572
23	-MF	23	1.1794	0.8553	0.6829	1.6507
24	-MF	24	0.8451	0.4412	1.5437	0.3143
25	-MF	25	0.8315	1.0173	1.7401	0.6358
26	-MF	26	2.4613	0.3953	1.8989	0.3641
27	-MF	27	1.2838	0.6404	2.4346	0.2564
28	-MF	28	0.8999	0.4422	2.7762	-0.1470
29	-MF	29	1.0368	1.2425	1.9730	0.0474
30	-MF	30	1.2183	0.9471	2.6047	-0.3238
31	-MF	31	1.4559	0.1420	2.3873	0.3165
32	-MF	32	1.2786	0.2303	2.6641	0.1925
33	G--	33	0.1380	0.2565	0.2301	1.6928
34	G--	34	-0.2868	1.6162	0.5097	1.2849
35	G--	35	0.5091	2.2774	-0.2943	1.2858
36	G--	36	0.1403	1.8979	-0.0154	1.3104
37	G--	37	-0.1601	0.8854	0.3862	1.3180
38	G--	38	0.2644	2.0856	0.3384	1.2273
39	G--	39	0.2518	2.4156	0.3383	1.3912
40	G--	40	0.2320	2.3561	0.4613	1.1378
41	G--	41	-0.1427	1.7133	0.0671	1.1561
42	G--	42	0.0078	2.4610	0.4331	1.0393
43	G--	43	0.0444	2.4233	0.1999	1.3118
44	G--	44	0.0472	2.4865	0.1909	1.2968
45	G--	45	-0.0193	1.6625	0.6049	1.1808
46	G--	46	0.3107	2.4854	0.1495	0.8099
47	G--	47	-0.0384	2.1465	-0.1401	0.8796
48	-M-	48	0.5564	0.9860	2.6207	0.1803
49	-M-	49	0.5545	0.1065	2.5131	1.0216
50	-M-	50	1.3076	1.0333	2.5379	0.0253

Appendix C (Contd)

			G	M	F
51	-M- 51	0.6596	0.8871	2.7242	0.3913
52	-M- 52	1.0294	0.6579	2.8954	0.3085
53	-M- 53	0.2070	0.1481	1.2230	1.7473
54	-M- 54	0.5665	-0.1711	2.1481	1.0206
55	-M- 55	0.1935	0.1146	0.9999	1.5811
56	-M- 56	0.7061	0.2843	2.0019	1.2807
57	-M- 57	0.4004	-0.1364	2.1543	1.4435
58	-M- 58	0.2637	0.1754	1.3508	1.4514
59	-M- 59	0.4119	-0.1541	2.6532	1.1185
60	-M- 60	0.3274	-0.1230	0.8786	1.6760
61	-M- 61	0.3959	-0.3750	1.8765	1.1659
62	-M- 62	0.3342	-0.0311	1.9881	1.4587
63	--- 63	0.0489	0.1613	-0.0370	1.1486
64	--- 64	0.0920	0.1912	-0.0784	1.3034
65	--- 65	0.0565	0.2248	0.0528	1.2519
66	--- 66	0.0128	0.0803	0.1040	1.0482
67	--- 67	-0.0685	0.2681	0.1188	1.2033
68	--- 68	0.1879	0.1231	-0.0129	1.5321
69	--- 69	-0.0920	0.2959	0.5458	0.9197
70	--- 70	-0.0170	0.3309	0.2019	1.3799
71	--- 71	0.1255	0.4313	0.0389	1.5636
72	--- 72	0.1200	0.2786	0.3962	1.6197
73	--- 73	-0.0076	0.4668	0.1658	1.3734
74	--- 74	-0.1147	0.6916	0.2299	1.1463
75	--- 75	0.2688	0.2077	-0.0445	1.1668
76	--- 76	0.1924	0.0121	0.2498	1.2722
77	--- 77	0.1208	0.4375	0.1412	1.3315
78	GM- 78	1.3231	1.7105	2.0295	-0.5241
79	GM- 79	2.4081	2.0058	0.1261	0.4232
80	GM- 80	1.1680	1.7495	0.4908	0.8728
81	GM- 81	1.9955	2.2814	0.8191	0.1984
82	GM- 82	1.2097	2.7527	0.9135	0.2507
83	GM- 83	2.6116	2.4049	0.3705	-0.0869
84	GM- 84	1.1262	2.6199	0.1399	0.3919
85	GM- 85	2.3463	2.4090	0.6223	-0.0646
86	GM- 86	1.1393	2.6758	0.2833	0.2801
87	GM- 87	1.7075	-2.2930	1.5258	-0.4538
88	G-F 88	3.2974	0.6286	0.9642	0.1501
89	G-F 89	1.2713	2.0150	1.5990	0.3659
90	G-F 90	0.3559	2.0967	0.3840	0.2402
91	G-F 91	1.5915	2.1472	0.5420	-0.9773
92	G-F 92	1.8637	2.2252	1.3558	0.2637
93	G-F 93	0.9131	1.5413	1.7729	0.3789
94	G-F 94	0.9817	2.0763	0.1723	-0.6143
95	--F 95	3.2741	-0.0533	0.4956	0.9232
96	--F 96	3.7817	-0.8112	0.0207	1.0428
97	--F 97	0.4253	0.2859	-0.0639	0.8372
98	--F 98	2.8991	-0.3975	0.8465	1.3636
99	--F 99	0.3888	0.3117	0.6801	1.6809
100	--F100	3.5336	0.5211	0.4268	0.2701

Appendix C (Contd)

Orthogonal Rotation--Factor Scores

			G	M	F
1	101	1.0787	3.0691	1.1456	1.2325
2	102	2.2717	1.4413	0.2036	0.4328
3	103	0.6138	2.9694	0.7101	0.7296
4	104	1.4439	1.6894	0.2335	-0.5186
5	105	1.3693	1.9628	1.5245	-0.5896
6	106	0.5663	3.3310	1.9588	1.8011
7	107	1.4454	2.5761	0.8218	0.4097
8	108	1.9897	1.5581	0.3704	-0.3452
9	109	2.3366	1.7027	0.2031	-0.1394
10	110	1.9074	1.6268	1.4152	-1.2072
11	111	1.1965	3.1019	1.0740	-0.2623
12	112	1.2119	3.7921	-0.4874	-0.2084
13	113	0.9383	2.0398	0.0923	-0.2099
14	114	1.5802	1.9284	1.0880	-0.2223
15	115	1.7092	1.6987	0.8644	1.2450
16	116	2.2825	0.8542	-0.5919	1.0951
17	117	1.3426	2.5489	0.4992	1.0354
18	118	1.3384	1.9837	2.0334	0.1944
19	119	0.8379	2.9159	1.9558	0.3224
20	120	1.3413	2.5697	0.3823	-0.5238
21	121	1.8967	1.9118	0.9870	-0.1686
22	122	1.4906	3.0726	0.8135	0.5676
23	123	1.6246	1.3764	0.9271	-0.4607
24	124	0.3873	4.2315	1.2688	-0.7115
25	125	1.7973	1.7562	-0.8572	-0.5718
26	126	2.2505	1.1855	1.0911	-0.0906
27	127	1.3349	2.1146	1.5456	1.7585
28	128	1.4349	1.4168	0.5265	1.4192
29	201	2.2362	0.3588	1.0128	-0.0411
30	202	1.6604	0.1902	2.7510	0.1690
31	203	2.2372	1.1018	1.1814	0.7954
32	204	1.3243	0.6888	1.3288	-0.0528
33	205	1.9383	-0.1402	2.6841	0.5129
34	206	1.3328	0.9541	2.0270	1.1693
35	207	1.3753	1.2566	2.4751	0.5209
36	208	1.6251	1.5412	1.0513	1.4494
37	209	1.9258	0.9822	2.0778	0.6646
38	210	2.3883	0.1370	1.7949	-0.5526
39	211	2.2018	-0.4809	0.3717	-0.1007
40	212	1.9312	1.0714	1.9356	1.0679
41	213	0.7267	0.7480	2.0619	0.8944
42	214	2.6777	0.4144	0.3652	-0.4166
43	215	2.0210	0.9855	1.4945	-0.7648
44	216	1.6518	2.0797	1.7848	0.7105
45	217	1.9946	0.4207	1.9490	1.6611
46	218	1.7016	0.6830	2.3334	0.6152
47	219	1.8135	0.2399	2.3049	-0.5032
48	220	1.5903	0.1577	1.8892	-0.4392
49	221	2.5797	0.8103	0.2785	-0.2965
50	222	1.5977	0.2077	3.0878	0.2630

Appendix C (Contd)

			G	M	F
51	223	3.0076	0.3314	-1.0053	-0.1041
52	224	1.8089	0.3236	2.3684	-0.8741
53	225	2.0944	-0.3583	1.6719	0.3090
54	226	0.5112	0.2882	3.7220	-0.5120
55	227	1.6985	-0.3280	1.9754	0.7573
56	228	1.8365	1.7435	2.0048	0.6527
57	301	1.4642	-0.2391	0.4453	0.2724
58	302	2.7839	0.0442	-0.8793	0.1046
59	303	2.6111	0.4987	-0.4997	-0.2833
60	304	2.8211	0.9442	0.3786	-0.1325
61	305	2.0642	0.0576	1.4910	1.5470
62	306	1.9526	0.9950	1.6707	2.0386
63	307	2.2938	-0.2465	2.1943	-0.2162
64	308	2.4130	-0.1237	1.4629	0.7785
65	309	2.8829	-0.1567	-0.3355	-0.1994
66	310	2.2060	0.2457	1.1805	-0.7798
67	311	-0.7139	1.2753	1.0248	5.1282
68	312	2.7225	0.6940	0.6373	-0.2575
69	313	1.7036	2.4673	1.4935	2.8903
70	314	2.2999	0.4019	0.8592	0.0958
71	315	2.1708	1.2667	0.9467	-0.6585
72	316	2.4850	0.6529	0.0909	0.6317
73	317	1.8361	0.5355	1.3618	1.4195
74	318	2.4429	0.4428	1.1124	1.1714
75	319	2.1854	1.0465	1.0454	-0.7820
76	320	2.3212	0.6085	1.4521	1.2913
77	321	2.0370	-0.8843	1.9138	0.4606
78	322	2.2210	-0.0650	-0.4251	-0.2954
79	323	1.3328	-0.3674	2.3417	0.1254
80	324	2.9117	0.2331	0.0999	-0.2212
81	325	2.6341	-0.5418	0.3330	-0.1187
82	326	2.1788	0.8865	0.6154	-0.6412
83	327	1.9888	0.9767	1.4663	1.9465
84	328	2.3840	1.0394	0.4387	1.4171

APPENDIX D

Complete Factor Loadings and Factor Scores After an Oblique Rotation

Appendix D

Oblique Rotation--Factor Loadings

	T	G	M	F
1	6.426	3.024	1.209	-0.458
2	6.512	3.838	0.665	0.030
3	6.550	3.372	0.536	-0.206
4	6.501	3.704	0.198	0.230
5	6.646	3.276	0.710	-0.175
6	3.604	3.547	0.894	1.314
7	6.360	3.612	1.132	-0.102
8	4.304	-4.155	0.695	1.673
9	6.618	3.257	1.169	-0.441
10	6.618	3.285	0.988	-0.328
11	5.511	4.305	1.232	0.266
12	6.665	3.547	0.960	-0.244
13	5.667	3.539	1.274	-0.002
14	6.518	3.610	1.143	-0.323
15	6.531	3.507	1.056	-0.193
16	5.250	1.085	0.202	-0.549
17	4.452	0.935	0.518	-0.302
18	2.095	-1.007	0.260	0.539
19	3.296	-0.156	0.861	0.175
20	3.246	-1.113	0.770	-0.278
21	1.493	-0.787	2.637	0.043
22	4.865	1.562	1.381	-0.453
23	0.928	1.806	0.406	2.866
24	1.778	0.459	1.533	0.249
25	2.069	1.611	1.651	1.211
26	3.973	0.562	1.711	-0.294
27	2.937	0.594	2.442	-0.027
28	2.767	-0.068	2.926	-0.810
29	3.282	2.037	1.866	0.328
30	3.838	1.163	2.611	-0.730
31	2.582	-0.419	2.444	-0.390
32	2.660	-0.390	2.770	-0.528
33	-1.281	0.486	0.141	2.862
34	0.060	3.194	0.305	3.408
35	1.525	5.145	-0.819	3.912
36	0.713	4.124	-0.392	3.680
37	-0.590	1.704	0.268	2.838
38	1.281	4.400	-0.040	3.580
39	1.424	5.108	-0.098	4.127
40	1.649	4.921	0.061	3.643
41	0.338	3.628	-0.224	3.342
42	1.550	5.109	0.047	3.647
43	1.190	5.139	-0.223	4.102
44	1.271	5.280	-0.243	4.132
45	0.543	3.299	0.377	3.188
46	2.218	5.367	-0.320	3.250
47	1.142	4.673	-0.534	3.276
48	2.455	1.095	2.699	0.321
49	0.625	-0.748	2.695	0.971
50	3.650	1.398	2.498	-0.103
51	2.304	0.860	2.810	0.523
52	2.715	0.373	2.991	0.041
53	-1.016	-0.167	1.263	2.599
54	0.235	-1.183	2.329	0.820
55	-0.967	-0.145	1.025	2.360
56	0.558	-0.107	2.062	1.617

Appendix D (Contd)

	T	G	M	F
57	-0.402	-1.146	2.340	1.585
58	-0.553	-0.153	1.404	2.095
59	0.113	-1.402	2.912	0.920
60	-1.172	-0.573	0.906	2.301
61	-0.449	-1.539	2.076	1.002
62	-0.457	-0.861	2.144	1.758
63	-1.008	0.377	-0.113	1.991
64	-1.099	0.470	-0.176	2.264
65	-1.013	0.476	-0.027	2.188
66	-0.984	0.133	0.067	1.738
67	-1.063	0.513	0.059	2.168
68	-1.261	0.316	-0.112	2.532
69	-0.617	0.379	0.547	1.637
70	-1.090	0.623	0.129	2.472
71	-1.048	0.943	-0.096	2.849
72	-1.148	0.457	0.329	2.727
73	-0.944	0.934	0.065	2.581
74	-0.596	1.365	0.123	2.420
75	-0.687	0.529	-0.161	1.993
76	-1.000	-0.038	0.210	1.953
77	-0.765	0.910	0.026	2.455
78	4.771	3.080	1.831	-0.307
79	4.867	4.793	-0.541	1.597
80	2.585	3.809	0.071	2.407
81	5.070	4.990	0.258	1.426
82	4.468	5.789	0.396	2.127
83	6.174	5.588	-0.343	0.985
84	3.805	5.825	-0.445	2.456
85	5.884	5.428	-0.024	1.046
86	4.048	5.885	-0.291	2.283
87	5.632	4.640	1.113	0.298
88	5.243	1.658	0.511	-0.479
89	3.914	3.915	1.275	1.511
90	2.484	4.422	0.029	1.950
91	5.549	4.730	0.065	-0.401
92	4.950	4.605	0.887	1.397
93	2.997	2.741	1.598	1.202
94	4.143	4.606	-0.265	0.405
95	3.534	0.394	0.075	0.320
96	3.156	-0.916	-0.410	-0.166
97	-0.053	0.739	-0.206	1.481
98	2.330	-0.582	0.564	0.777
99	-0.721	0.463	0.603	2.703
100	5.139	1.715	-0.112	-0.319

Appendix D (Contd)

Oblique Rotation--Factor Scores

		T	G	M	F
1	1	1.2239	0.3047	1.1030	1.5944
2	2	2.2009	-1.0785	-0.5473	1.7066
3	3	0.6236	0.8148	0.9472	0.8783
4	4	1.1628	0.0600	-0.0287	0.4449
5	5	1.2041	0.2573	1.1860	0.4525
6	6	0.9528	0.5593	2.0503	1.7790
7	7	1.3894	0.1274	0.6089	1.1788
8	8	1.7544	-0.4863	-0.1953	0.9388
9	9	2.1065	-0.7450	-0.4772	1.2923
10	10	1.5849	-0.0481	0.8240	0.3154
11	11	0.9783	0.8675	1.1032	0.5030
12	12	0.7721	1.2437	-0.1034	0.3752
13	13	0.7083	0.4913	0.1301	0.3385
14	14	1.4463	-0.0588	0.6806	0.8288
15	15	1.9127	-0.8882	0.2728	2.0342
16	16	2.3213	-1.6589	-1.4179	2.1777
17	17	1.4039	-0.0670	0.3247	1.5695
18	18	1.4198	-0.0523	1.5874	1.0869
19	19	0.8905	0.7611	1.9413	0.8232
20	20	1.0142	0.6047	0.3416	0.3503
21	21	1.7526	-0.3193	0.4448	1.0593
22	22	1.4313	0.2939	0.6895	1.3056
23	23	1.4547	-0.2822	0.4164	0.6823
24	24	0.0312	2.2485	1.9156	-0.3836
25	25	1.3574	-0.1120	-1.1099	0.5184
26	26	2.1779	-1.0026	0.2100	1.3838
27	27	1.7242	-0.6257	1.0835	2.2430
28	28	1.6727	-0.9030	0.0278	1.9788
29	29	2.2291	-1.4535	-0.0386	1.4438
30	30	1.9416	-1.2562	1.6673	1.4185
31	31	2.3940	-1.4131	0.2113	2.0734
32	32	1.3624	-0.6128	0.7150	0.8799
33	33	2.3079	-1.7795	1.3874	1.8671
34	34	1.7245	-1.0098	1.2851	1.8845
35	35	1.6896	-0.6176	1.7675	1.4377
36	36	1.9145	-1.0020	0.4220	2.1647
37	37	2.1771	-1.2176	1.1075	1.8678
38	38	2.3646	-1.4886	0.5571	1.2270
39	39	2.1702	-1.8361	-0.7595	1.3543
40	40	2.2555	-1.3399	0.9729	2.1658
41	41	1.0961	-0.5617	1.5594	1.3061
42	42	2.4836	-1.5719	-0.7554	1.3653
43	43	1.8581	-0.6683	0.6651	0.7661
44	44	1.8082	-0.4412	1.2158	1.6541
45	45	2.5090	-1.9848	0.7687	2.6955
46	46	2.0022	-1.1995	1.3653	1.7275
47	47	1.8720	-1.0469	1.2732	0.9496
48	48	1.6307	-0.9437	0.9906	0.8243
49	49	2.3783	-1.3365	-0.7073	1.3707
50	50	1.9418	-1.2493	1.9833	1.4831

Appendix D (Contd)

		T	G	M	F
51	51	2.7218	-1.9536	-2.1277	1.6877
52	52	1.7799	-0.8442	1.3756	0.6619
53	53	2.3075	-1.8983	0.4094	1.7213
54	54	0.7805	-0.1012	3.0894	0.2610
55	55	2.0676	-1.7890	0.8224	1.8482
56	56	2.0227	-0.7377	1.2543	1.7610
57	57	1.5415	-1.3259	-0.3405	1.1782
58	58	2.5932	-2.0348	-1.9980	1.7356
59	59	2.3444	-1.5116	-1.4640	1.3414
60	60	2.6511	-1.5132	-0.7105	1.6516
61	61	2.5224	-2.1701	0.2695	2.6242
62	62	2.4833	-1.7983	0.6473	2.9088
63	63	2.4257	-1.7768	0.8348	1.4836
64	64	2.6839	-2.1981	0.1051	2.2531
65	65	2.6940	-2.1010	-1.5949	1.6217
66	66	2.0513	-1.1853	0.1481	0.8744
67	67	0.5654	-0.9811	1.1162	3.5603
68	68	2.5754	-1.5291	-0.4896	1.5292
69	69	2.3166	-1.1819	0.8707	3.3278
70	70	2.3019	-1.5307	-0.2000	1.5731
71	71	1.9425	-0.6579	0.1799	0.8773
72	72	2.4996	-1.7375	-0.9293	2.0193
73	73	2.2218	-1.6903	0.3749	2.3489
74	74	2.7232	-2.0730	-0.1136	2.5167
75	75	1.9550	-0.7370	0.2186	0.8102
76	76	2.6621	-1.9546	0.2623	2.5579
77	77	2.3564	-2.2080	0.5162	1.8498
78	78	2.0179	-1.5247	-1.3501	1.1214
79	79	1.6107	-1.2859	1.3388	1.1672
80	80	2.7279	-1.9155	-1.1433	1.6460
81	81	2.5812	-2.1765	-0.9978	1.6095
82	82	1.9443	-0.8659	-0.1957	0.8819
83	83	2.4736	-1.7905	0.4571	2.8416
84	84	2.6020	-1.7964	-0.5547	2.5790

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
Educational Testing Service Princeton, New Jersey 08540	Unclassified
	2b. GROUP

3. REPORT TITLE

PRINCIPAL COMPONENT ANALYSIS OF RATINGS OF SOME DEVIANT ENGLISH SENTENCES

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Technical Report

5. AUTHOR(S) (First name, middle initial, last name)

Joseph H. Danks and Charles Lewis

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
February 1970	87	22

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
N 00014-67-A-0151-0006	
b. PROJECT NO. NR 006-04-01	RB-70-12
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	

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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Office of Naval Research Navy Department Washington, D. C. 20360

13. ABSTRACT

The comprehension of deviant sentences, a not infrequent demand in natural situations, is dependent on several linguistic variables. Grammaticalness (G), meaningfulness (M), and familiarity (F) are three variables which are potentially such. In order to study the effect of violating these variables upon Ss' responses to deviant sentences, 85 deviant and 15 correct sentences were assigned to eight groups representing all combinations of two values ("correct" or "deviant") on these three variables. The 100 sentences were given to four equal groups of Ss (total N = 112), who rated each sentence from 0 to 10 on the basis of either grammaticalness (G*), meaningfulness (M*), familiarity (F*), or ordinariness (O*). The data of the first three groups were then combined into an 84 by 100 matrix. A principal components analysis was performed on the cross-product matrix with a varimax rotation. Four interpretable factors emerged, accounting for 89% of the variability. Factor I was a general comprehensibility factor in the factor loadings, related to changes in all three variables. However, the familiarity Ss scored highest on Factor I. Factors II and III represented G-G* and M-M*, respectively, in both factor loadings and factor scores. Factor IV corresponded to the F variable in the factor loadings, but was uninterpretable for the factor scores.

DD FORM 1 NOV 65 1473 (PAGE 1)

S/N 0101-807-6801

Security Classification

3ND PPSO 13152

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
psycho-linguistics						
principal components analysis						
deviant sentences						
grammar						
meaning						
familiarity						